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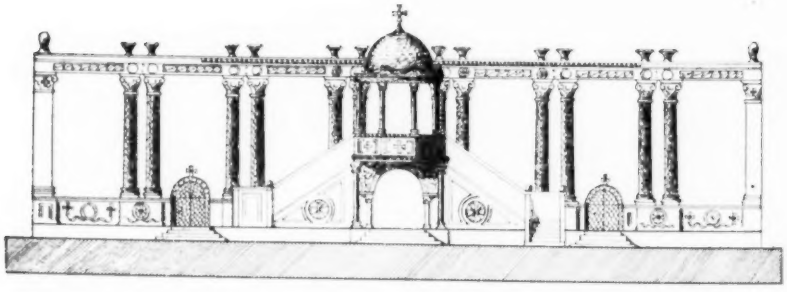

THE PULPIT OF THE CHURCH OF SANTA SOPHIA. A WORK OF THE VI. CENTURY.

EPISCOPAL THRONES AND PULPITS.

ARCHITECTURE is commonly said to be "the art of planning and constructing a house,"[1] or "the science and art of designing and constructing buildings,"[2] or the "art of building, specifically of fine or beautiful buildings,"[3] or it is "a decorative fine art; that is it consists in applying fine art to certain objects of utility—in this case to buildings."[4]

It is believed, upon a careful scrutiny of these definitions, one and all, it will be found that they are inadequate, for it would seem as though there was more in "The noble art," than they imply. Is not architecture in truth the art of creating a building in all its completeness—in all that is understood by the words construction and proportion, decoration and fixed furniture, utility and fitness.

The art embraces many arts and a number of sciences: "The synthesis of the fine arts, the commune of the crafts." At least this was Virtruvius' understanding of the subject, for he says the following arts and sciences should come within the knowledge of an architect: Drawing, geometry, optics, arithmetic, physics, music, and the laws governing buildings and contracts.[5] Optics in

[1]Stormouth's Dictionary.
[2]Standard Dictionary.
[3]Century Dictionary.
[4]Russell Sturgis.
[5]The Architecture of Marcus Virtruvius Pallio, B. I., London, 1874.

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his mind no doubt covered the relationship of color, the effects of light and shade, while music dealt with harmony of form and color, the ensemble and the environs.

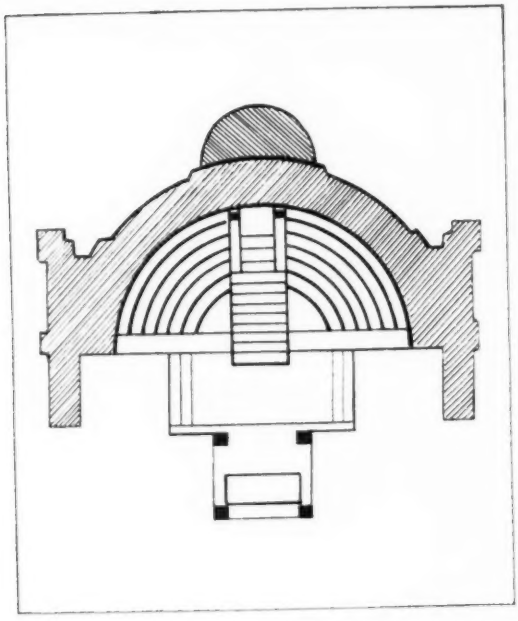
It is evident, from the foregoing, that a true architect must be a man of broad culture and large knowledge, especially in these days of electrical appliances and sanitary plumbing, scientific heating and ventilating, together with the thousand and one requirements incident to nineteenth-century civilization and comfort; he must, in fact, be a student of all the fine arts, of history, of archæology, and of many old and new sciences, as modern architecture is largely elective.

The perfect architect, one filling the demand of the above specifications, is indeed an ideal being. Nevertheless, growth and progress suggest that all should aspire to that perfection. "We see how few of those," says Virtruvius, "who profess a particular art, arrive at perfection in it, so as to distinguish themselves; hence, if but a few of those practising an individual art obtain lasting fame, how should the architect, who is required to have a knowledge of so many, be deficient in none of them. An architect, therefore, is sufficiently educated, whose general knowledge enables him to give his opinion on any branch when required to do so." It is quite clear that no architect can grasp all the direct or indirect knowledge belonging to his profession. A man so gifted is rarely met with; nor can he even hope to excel in all branches of his art, for the field is far too great. It often happens that the special knowledge requisite for one branch is of very little moment in another. For example: The architect who devotes his attention to ecclesiastical architecture, must be conversant with the Scriptures, church history, sacred iconography, smybology and ecclesiology; on the other hand a familiarity with these subjects would be useless to an architect whose business it is to erect office buildings and other commercial structures.

The one branch in which there is greater liability to err than in any other, is that appertaining to building churches (not meeting-houses), particularly the ecclesiastical section, and all from a want of knowledge of the accessory arts and sciences belonging to ecclesiastical architecture.

In order to encourage, or even provoke, a study of ecclesiology among architectural students, the writer, from time to time, has published in the pages of this magazine[6] and other journals, tentative articles on ecclesiological matters of the greatest importance. Having this end still in view, the following brief notes concerning "Ecclesiastical Thrones and Pulpits," were written; notes drawn from the author's memoranda, an accumulation of years of obser-

[6]Architectural Record, Vols. IV. and V., 1895-'96.



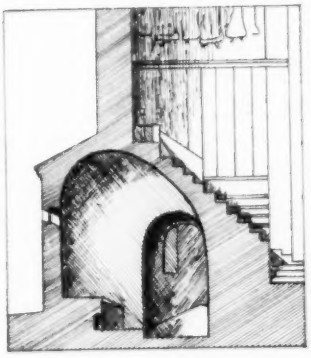
Plan of the Episcopal Throne in the Cathedral at Torcello (7th Century).

vation, from a careful examination of existing examples, and from a study of the canon laws governing these objects.

In the houses of the people of Israel there was always a seat set apart for the use of the aged, the wise and the powerful—a custom alluded to in a number of passages in the old Testament, and common to many nations of antiquity, more especially in the Orient. Hence, it was nothing new when the primitive Christians, and those of later days, set apart, in their places of assembly, a particular seat or chair for the use of their presiding officer or teacher.

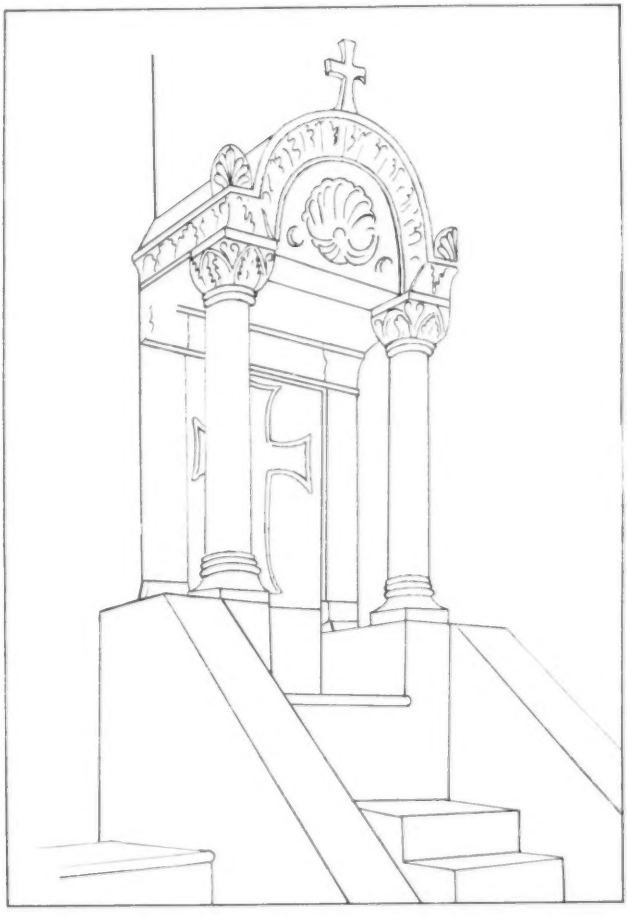
The words of King David: "Let them exalt him in the church of the people, and praise him in the chair of the ancients," are most applicable to the enthronement of a bishop, for he is one who has been lifted up into the high place in the church. The chair assigned to a bishop, from the first, was raised above those of the rest of the clergy and was looked upon as a symbol of Episcopal authority. It was from thence he instructed his people in the Word of God, ordained and sent on their mission the clergy of his jurisdiction.

The earliest Episcopal chairs were nothing more or less than pieces of domestic furniture, but when the Christians began to have among them converts from the upper classes of the Roman world,



A Longitudinal Section of the Episcopal Throne in the Cathedral at Torcello (7th Century).

two forms of official chairs came into use which had been employed at public functions by the law officers and other important persons of the empire: the *sella gestatoria,* and the *sella curulis.* The first was box shaped, with a square base, a high back, without arms and furnished on each side with rings through which carrying shafts



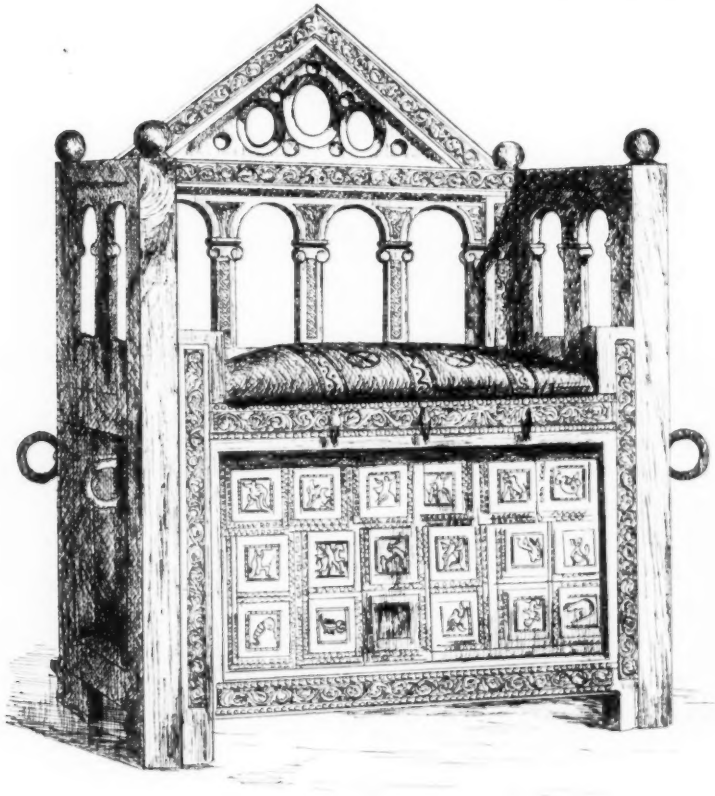
ELEVATION OF THE EPISCOPAL THRONE IN THE CATHEDRAL AT TORCELLO (7th CENTURY).

could be passed. This last feature is no longer in use, except on the *sella gestatoria* of the Pope. The other form was a folding chair with crossed legs like the celebrated chair of Dagobert now in the Hotel Cluny at Paris. Both of these forms are still employed.

The Episcopal chair in the early days was always placed at the end of the tribune, behind the altar facing the people, and so high up that the bishop could overlook the whole congregation. The words of the Apostolic Constitution (B. II., Sec. 28) direct that a

church shall be built in the form of a ship: "Let the Church be long, like a ship; at the east end, in the center, let the bishop's throne be placed, and let the presbyters be seated on both sides of him; and let the deacons stand near at hand." S. Ambrose, in a letter, written in the year 379, to Constantius, a newly made bishop, had the same thought in mind for he likens the church to a ship upon the sea of life. "You," he says, "have undertaken the office of a bishop, and now, seated in the stern of the church, you are steering it in the teeth of the waves." This arrangement of the Episcopal chair is found in S. Peter's at Rome, and in a number of the other cathedrals (*the cathedra churches*) of Italy, France and Germany. These special thrones, approached by flights of stairs (*absidae gradutae*), were generally immovable, and usually built of marble or stone; sometimes they were covered by canopies made of rich stuffs, a form of ornamentation in use as early, if not earlier than the fourth century, for S. Augustine refers to them in a letter written to Maximin in year 392 under the name: *cathedrae velatae*. On either side of the chair, along the walls of the apse, but at a lower level, were the seats of the clergy. Many of these early chairs or thrones were ornamented with lions heads, or with those of dogs, which were believed to be symbolical of certain virtues most necessary to a bishop; the lion from time immemorial has been a symbol of authority and justice, and it will be remembered that two lions stood, one on each side, by the throne of the wise King Solomon (I. Kings x., 19); and the two marked characteristics of a dog are vigilance and fidelity.

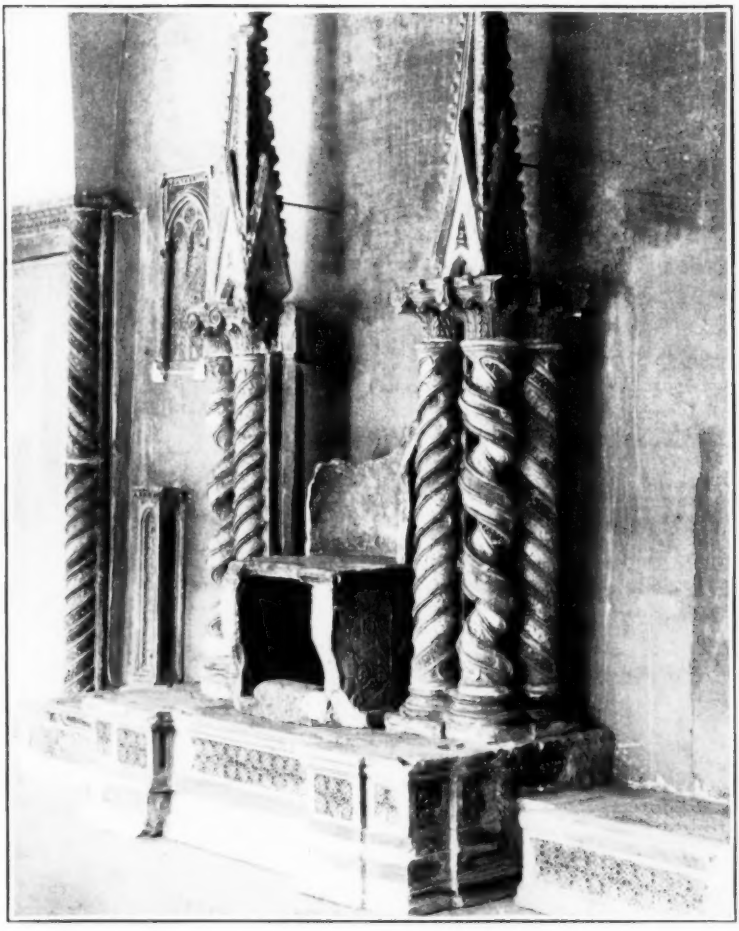
The Christians of the primitive and mediæval church were wont to regard with great veneration the thrones of their bishops, more particularly the chairs of those they looked upon as saints. Their feeling in this respect is found chronicled in as early a writer as Eusebius, who says in the IV. Book and nineteenth chapter of his history, that "the chair of S. James at Jerusalem has ever been held in veneration," so it is not surprising that many of the very first Episcopal thrones have come down to the present day. For a long while it was believed that the most ancient Episcopal chair in existence was the one at S. Peter's Church at Rome, which, it was said, once belonged to the Senator Prudans, and had been used by Saint Peter. Although this statement has been disputed by Garrucci and other distinguished Christian archæologists, it is admittedly a very old chair, and an excellent example of an early Episcopal cathedra. It is without arms, the back is in the form of a low pediment, and it is made of wood inlaid with ivory mosaics and carvings, representing the works of Hercules, and is similar to the chair in which S. Silvester is seated in the mosaic dome of the apse of S. John Lateran.



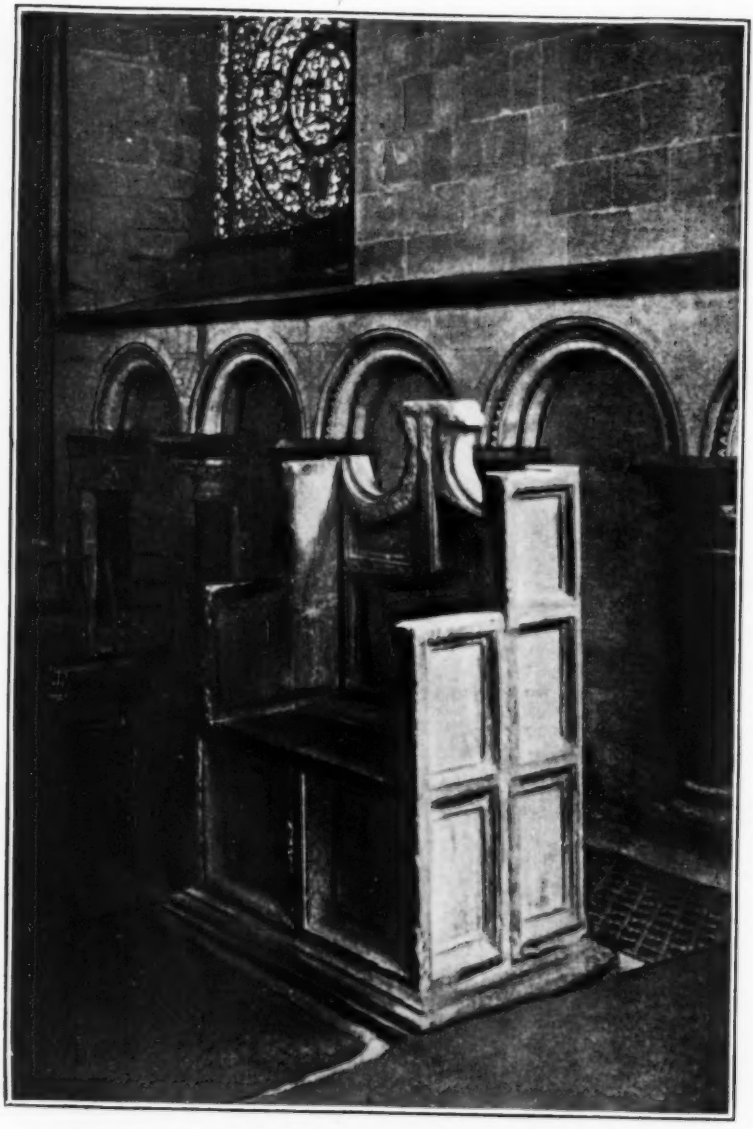
ST. PETER'S CHAIR AT ROME.

The Episcopal thrones found in the catacombs are nothing but high-backed chairs cut out of the tuf-rock; while those in the more ancient Roman churches—Saint Clement, Saint Mary in Cosmedin, etc.—are marble chairs taken from the Roman baths, in which there were endless numbers. The Thermæ of Caracalla alone possessed six hundred (Montfaucon, Iter. Ital. p. 137).

Everywhere in Italy and in many other parts of Christendom, with few exceptions, down to a late date, Episcopal thrones were almost always made of marble, and if they were not actually *thermæ* chairs, they partook of their character: simple in outline, free from ornamentation, except at the ends of the arms and feet, which were usually sculptured. After the advent of the Cosmati family of mosaicists, in the twelfth century, the Italian thrones were enriched with panels and bands of colored glass and marble mosaic inlays, which materially added to their beauty. Of the early wood and ivory thrones, which were always few compared with those of marble and stone, a very good idea can be obtained from the mo-



THE EPISCOPAL THRONE OF THE SEE OF ROME IN THE CHURCH OF S. GIOVANNI IN LATERANO. THE CHAIR IS ONE TAKEN FROM A ROMAN THERMAE.



THE EPISCOPAL CHAIR OF ST. AUGUSTINE AT CANTERBURY.

saics in S. Pudentiana and other Roman churches, and also in Santa Sophia, as illustrated in Zalzenberg's Baudenkmale von Constantinople. At Ravenna in Italy there is an Espicopal chair of this nature, one of the most celebrated examples of Byzantine work in ivory, now in existence, which was made for Maximian, who was Archbishop of Ravenna from A.D. 546 to 556. The front is square, the back round and high, the frame is of wood "entirely covered with plaques of ivory, arranged in panels with scenes from the Gospel and figures of saints richly carved in high relief. These plaques have borders with foliated ornaments, birds and animals, flowers and fruits, filling the intermediate spaces."

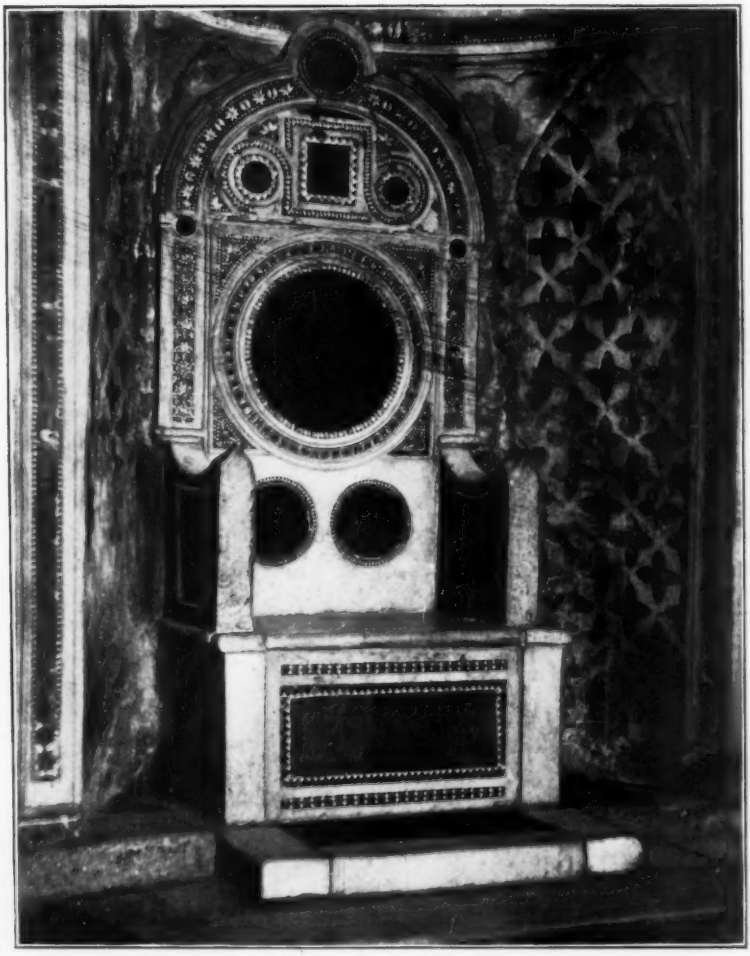
When Gothic architecture came into vogue it brought with it wooden thrones, most beautifully carved. Then it was that the situation of the throne was gradually changed from the bottom of the apse to the Gospel side of the chancel, where it has remained ever since. The modern Episcopal throne stands west of the altar, and on the north side of the chancel, upon a platform of three steps, with the upper step (the platform proper) wide enough at the two sides to accommodate a chair for the use of the assistants. The throne is either covered with a baldacchino or with a fixed canopy, or it is backed with a dossal, but whichever one is employed it is never wider than the throne. From the very first ages of the Faith it has been the custom to canopy the throne, either with textile fabrics or with permanent constructions of marble, stone, metal or wood.

The second form of the Episcopal chair, alluded to above, the *scila curulis*—a faldstool—although still in use, is of little importance professionally to the architect, because it is a portable seat.

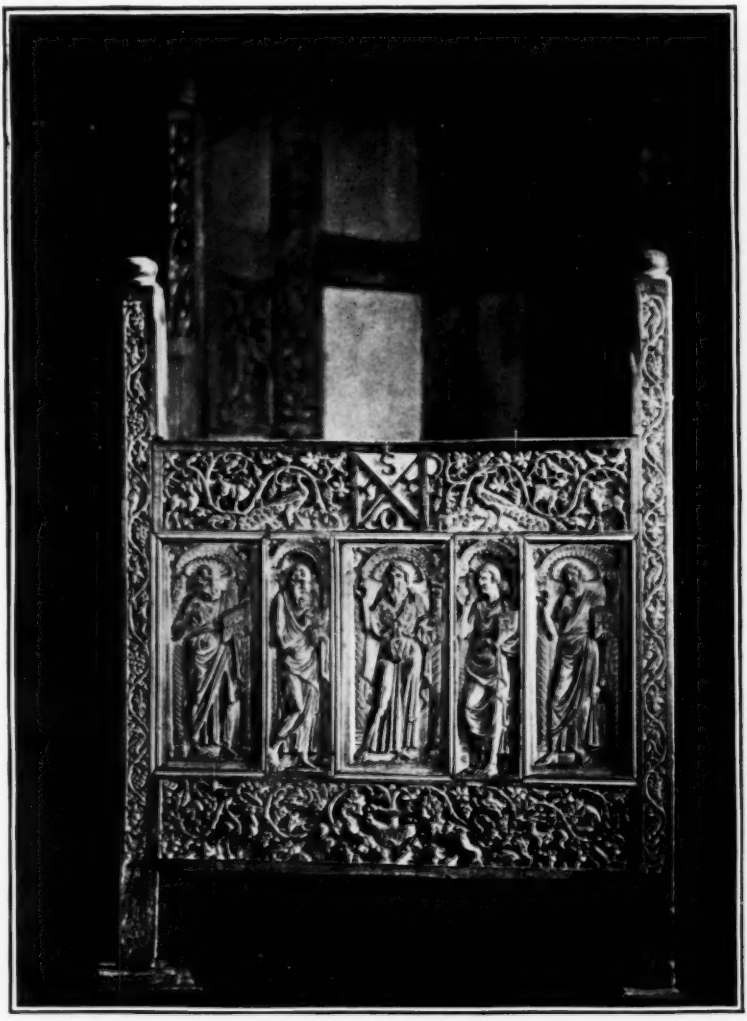
Next to the Episcopal throne the most important piece of ecclesiastical fixed-furniture is the pulpit, and in some ways more important, as it is almost a necessity in every church, large and small, while an Episcopal throne is little used outside of a cathedral.

The word pulpit is derived from the Latin *pulpetum*, a stage or platform of boards. The English substantive, according to modern usage, names a raised desk from whence the Gospels and Epistles are read, or from whence the sermon and other communications are delivered to the congregation, whenever assembled.

One of the earliest descriptions of a pulpit, if not the first, is the meager account of one erected by King Solomon in the great court of the temple: "A brazen scaffold, of five cubits long, and five cubits broad and three cubits high." If there was a pulpit in the second temple, which was built some five hundred years after that of Solomon's, no record of it has been kept, but it is known that the Jewish preachers of the time were in the habit of using pulpits, for when Ezra came to Jerusalem (B.C. 458), on his missions of re-

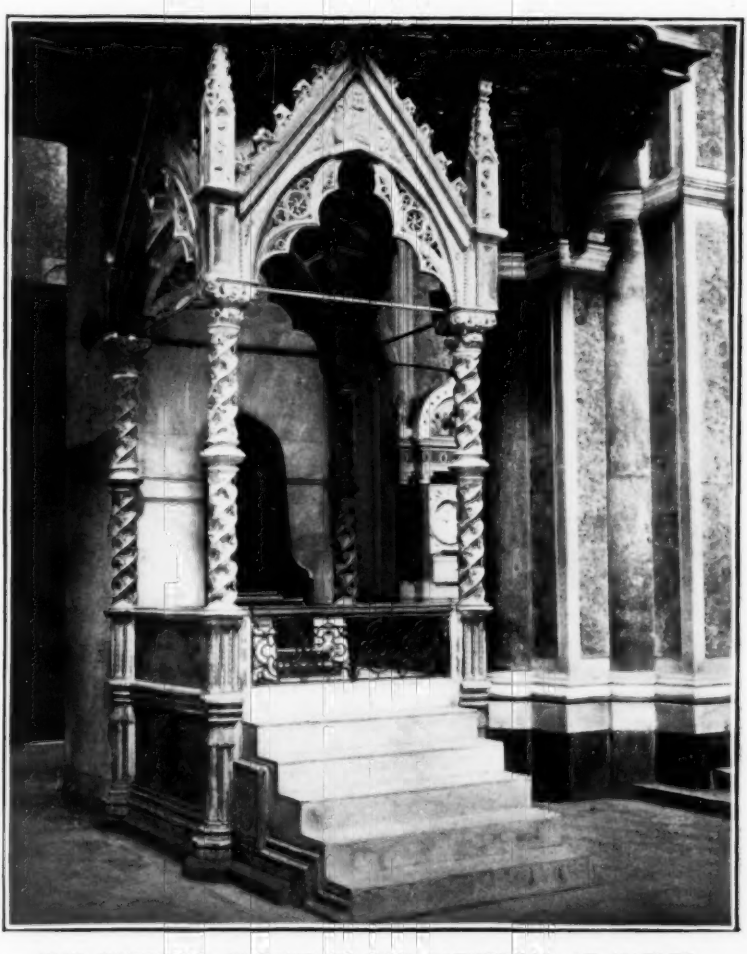


AN EPISCOPAL THRONE OF THE 12th CENTURY IN THE CHURCH OF S. BALBINA AT ROME.



THE EPISCOPAL CHAIR OF MAXIMIAN, ARCHBISHOP OF RAVENNA FROM A. D. 546 TO 556. MADE OF PLAQUES OF IVORY. BYZANTINE WORK.

AN EPISCOPAL THRONE OF WOOD (13th CENTURY) FROM VIOLLET-LE-DUC.



THE EPISCOPAL THRONE IN THE CATHEDRAL AT NAPLES.
A WORK OF THE 13th CENTURY.

form, he preached to the people from a "pulpit of wood, which they had made for the purpose." (Neb. viii., 4.)

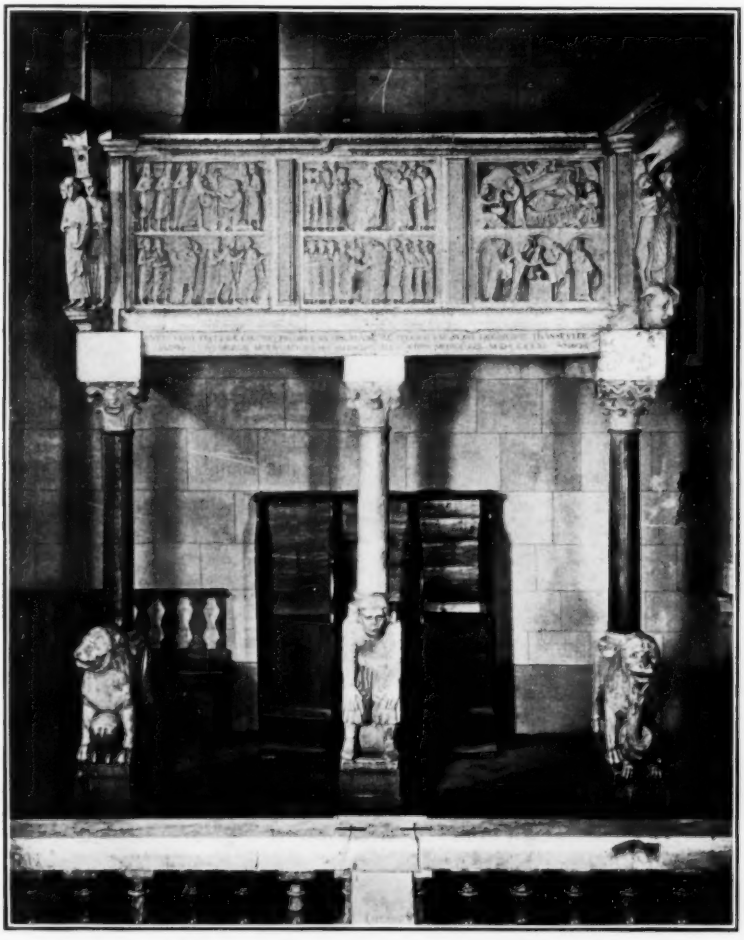
Just when pulpits were introduced, into Christian churches, is not known, but it is known, as stated above, that the instructions to the people were at first given from the Episcopal chair, and not from the pulpit, which was used originally as the place from whence the Word of God was read to the congregation.

Most of the basilican churches were provided with two pulpits or ambones—one on the north and the other on the south side of the choir. The ambo on the north side, which was higher than that on the south side, was generally approached by two flights of steps, one from the east and the other from the west; the first was used for entrance and the second for exit. From this ambo the deacon read the Gospels and the diptychs, the excommunications and proclamations, and after a time it was used as a preaching pulpit. Attached to it, or standing near by, was the paschal candlestick. The ambo on the south side of the choir, from whence the sub-deacon delivered the epistles, usually had but one flight of steps, and sometimes on the landing of the first two steps there stood a small reading desk for the use of the cantor. Such an arrangement of ambones may be seen still in the Church of S. Clement at Rome.

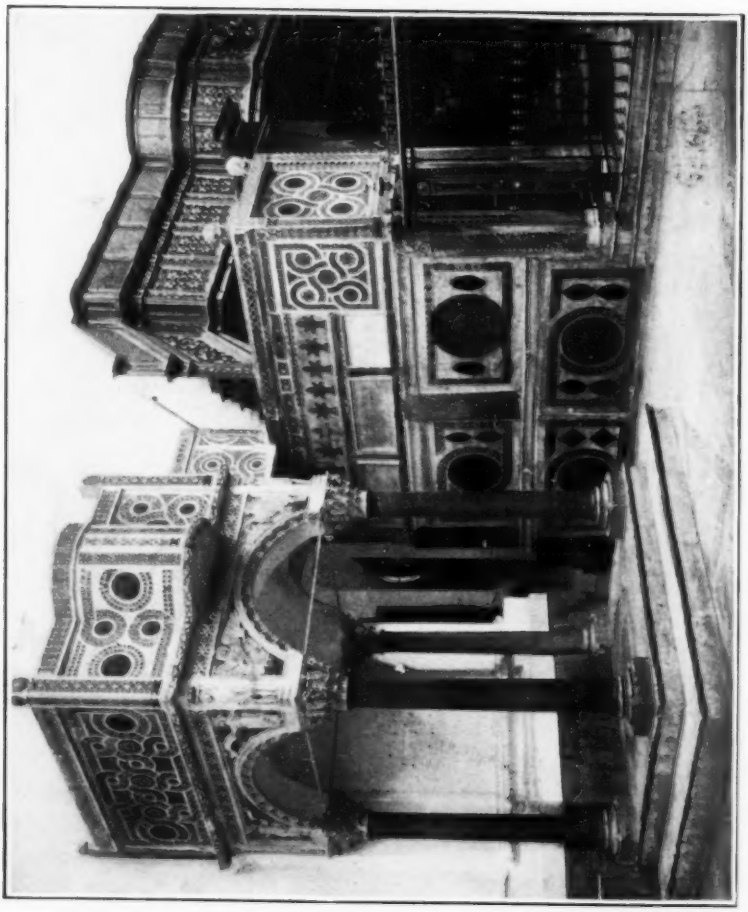
In S. Mark's Church at Venice and in the Duomo at Lesina, as well as in a number of Byzantine churches, the Gospel ambo was built above the Epistle ambo, in other words it was two stories high. The symbolism is obvious: The Gospel was read in the higher place that it might be heard everywhere. "Their sound is gone out unto all lands;" but the Epistle was read in the lower place, as typefying the law, which was confined to Judea. The desk of these and other ambones, on which rests the book of the Gospels, was supported upon the out-spread wings of an eagle, according to the word of David: "He came upon the wings of the winds."

During the seventeenth and eighteenth centuries in the Church of England, and its colonial offshoots, this style of pulpit, vulgarly called a double-decker, was much in use. A good example, antedating the Revolution, may be seen in Saint Michael's at Charleston, S. C.

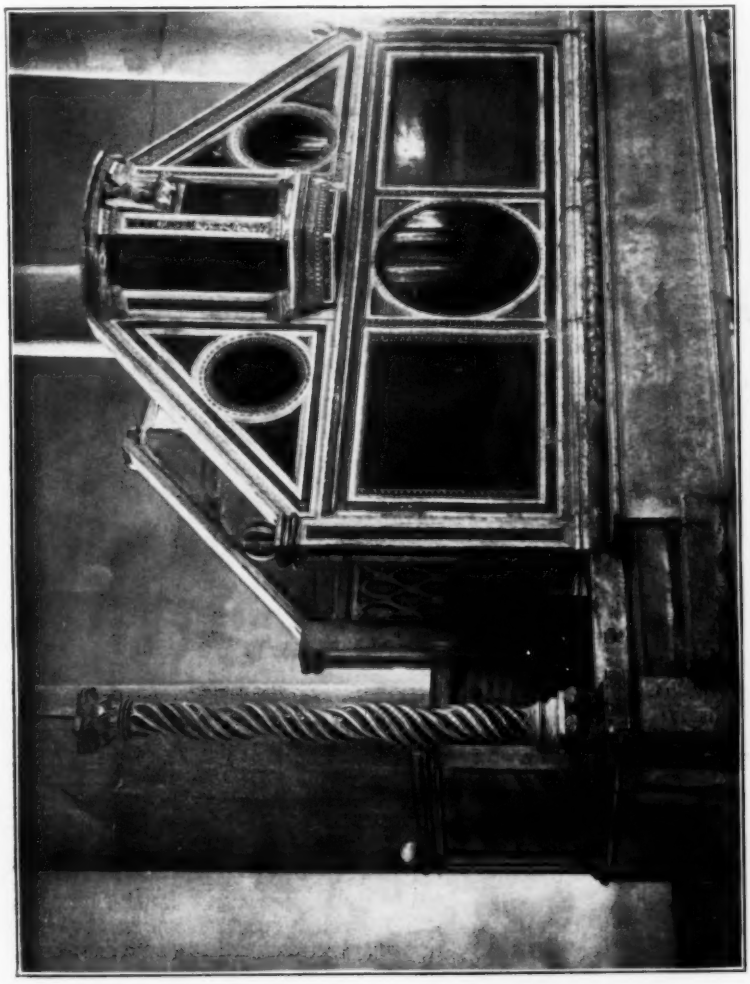
In Italy, during the fifteenth and sixteenth centuries, enclosed pulpits approached by one flight of steps, superseded the ambones of earlier days. At first they were in the form of a sarcophagus-like box, standing on four pillars, and often provided with two desks, one for the Gospel and the other for the Epistle; later they were made either on an octagonal or hexagonal plan. The marble pulpit in the Baptistry at Pisa, a masterful work that marked an



THE PULPIT IN THE CHURCH OF S. BARTOLOMEO AT PISTOIA.
A WORK OF A. D. 1250.



A PULPIT IN THE CATHEDRAL OF SALERNO, BUILT IN THE 13th CENTURY WITH MARBLES FROM THE RUINS OF ROME, ENRICHED WITH MOSAIC BY JACOBUS, THE 2d COSMATI.



GOSPEL AMBO IN THE CHURCH OF S. LORENZO FUORI LE MURI AT ROME.
IN MARBLE AND COSMATI MOSAIC; 12th CENTURY.

era in Tuscan art, the work of Nicola Pisano (A.D. 1205-1278), is a hexagon, supported on seven columns, six corresponding to the angles of the hexagon and resting alternately on lions and on simple blocks, and the seventh, larger than the others, placed in the centre, resting on a curious combination of human figures and monsters. The upright sides of the hexagon are divided from one another by groups of triple columns, and the five closed spaces or panels, are filled with bas-reliefs, in alabaster and Parian marbles, representing the Nativity, the Magi, the Circumcision, the Crucifixion, and the Judgment. The pulpit is of great interest to all students of architecture, because in its construction the trefoiled arch was first employed, that is in Italy, and became the seed from whence Italian Gothic forms germinated.

The people of Sienna, Vasari says, "Moved by the fame of this work, which was greatly admired, not by the Pisans only, but by all who beheld it, offered Nicola the constructions of that pulpit in their cathedral from which the Holy Gospel is wont to be read." In its execution it betrays a decadence in comparison with that of Pisa, but as he was largely assisted in the work by his son and other scholars, the weaker portions can be justly attributed to them.

It is a question if the great ambo of Saint Sophia at Constantinople in all its magnificence of rose-veined Lynnade marble, wrought silver, inlays of ivory, verde antique and gold mosaic compared in true artistic merit with either of these Pisano pulpits.

At Spoleto there is a thirteenth century pulpit, made of various colored marbles in union with limestone, hexagonal in form, and standing on six octagonal columns, with one face to the angle of the hexagon. This pulpit was imitated in a number of the churches in the cities along the Adriatic on the Istrian and Dalmatian side, with here and there some slight variations. For example, at Trau, the plan was changed to an octagon.

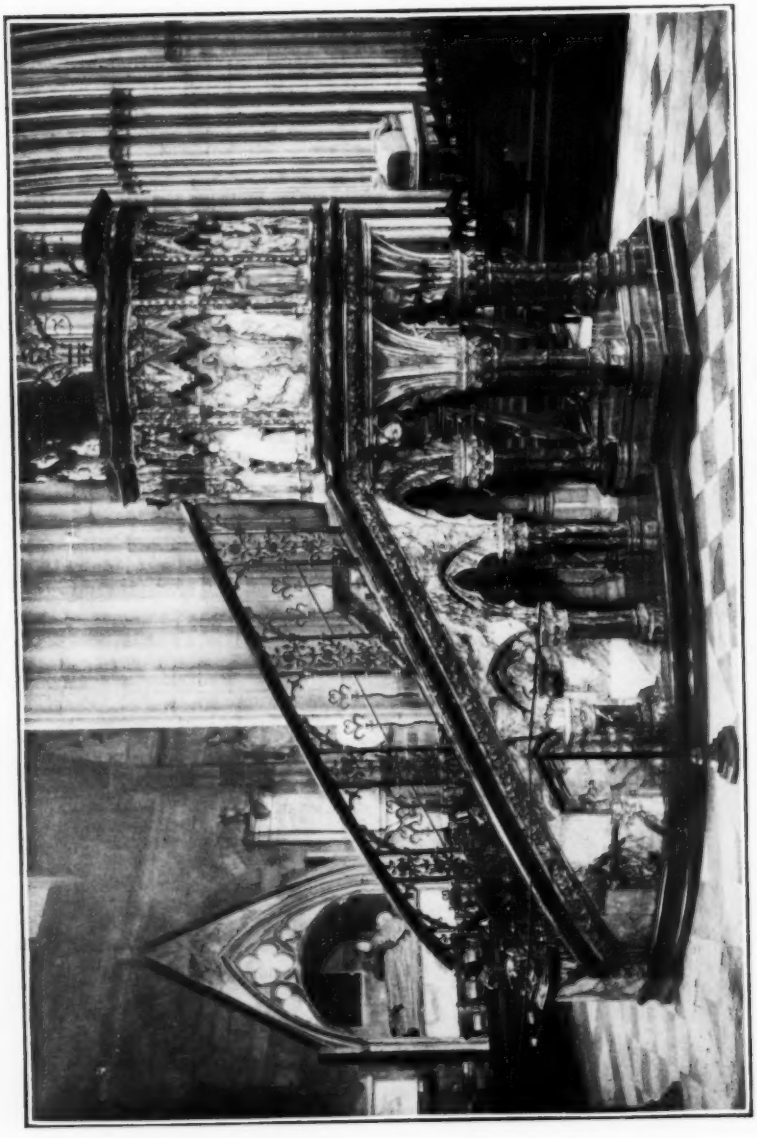
Out of door pulpits, introduced by the friars, are not common in many parts of Christendom. In Italy, the one at Perugia, in the Piazza di San Lorenzo, from which S. Bernardino preached, is an excellent example. In England, prior to the settlement of religion under Elizabeth, there were a number of them, of which the most renowned were S. Paul's Cross at London, and the iron pulpit in the galilee of Durham Cathedral, wherefrom a monk preached "every Holiday and Sunday at 1 o'clock in the afternoon."

The Reformation greatly augmented the importance of the pulpit, so much so that it soon eclipsed, in Protestant communities, all other ecclesiastical furniture and accessories of public worship, and with the introduction of high-closed pews, it became correspondingly lofty, so that its great height, together with its sounding-board and hour-glass, made it the one objective point in Cathe-

PULPIT IN THE CATHEDRAL AT NARNI. A WORK OF THE 15th CENTURY.

THE PULPIT IN S. ANDREA AT PISTOIA. THE WORK OF GIOVANNI PISANO, A. D., 1298.

PULPIT IN EXETER CATHEDRAL (19th CENTURY).



PULPIT IN THE NAVE OF WORCESTER CATHEDRAL (19th CENTURY).

drals and Parish churches. To-day, however, through the spread of Catholic thought and the revival of Christian architecture, the pulpit is being rapidly relegated to its proper place, even in non-liturgical denominations.

The modern pulpit is usually built on the Epistle side of the chancel, more rarely on the Gospel side, and often in the nave against the first pillar west of the chancel, on the south and sometimes on the north side. Its exact position, however, depends largely on the acoustic properties of the building. All kinds of material are employed in its construction and ornamentation, and no one form is used to the exclusion of others. In the pulpit at Worcester Cathedral, England, which is fixed against the second pillar in the nave, west of the transept, various marbles, in union with alabaster and metal are used and enriched with sculpture and chiseling, the ornament is elaborate, and the sculptured subjects most interesting—incidents from the Bible and figures of saints.

Caryl Coleman.

From a manuscript of 14th Century.

FIG. 1.—THE ENTRANCE HALL, HOTEL REGINA, RUE DE RIVOLI AND PLACE DES PYRAMIDES, PARIS.
Architect, M. Sibien.

MODERN ARCHITECTURE AND DECORATION IN FRANCE.

IT would be uttering the veriest commonplaces to speak of the incoherent state of present-day architecture and decoration in France, of its uncertainty as to its proper road, of its new attempts, its return to old modes, its failures and its successes. The Exposition has not served to enlighten us in these respects. It has not brought forth works of a sufficiently marked character to indicate any particular trend or create any movement. On the contrary, these diversified constructions afford us a true picture of the utter chaos in which we are struggling—palaces in classic styles and castles of fancy forms, colonnades flanked by metallic halls, cupolas and timberwork, and an infinite variety of gimcrack plaster-decoration mingled with countless attempts at "modern style," beneath which, nine times out of ten, the decorators have hidden their lack of talent and of notion of line, relief and proportion. All this has been visible—and with what exaggeration!—at the Exposition of 1900.

It is not our intention to conduct the reader through the Exposition, but we will run through Paris and the provinces in search of a few modern works of architecture and decoration that are worth bringing to the notice of American architects and others, who take an interest in the development of this art. We propose to furnish a sort of regular chronicle, consisting of a good many photographs and just enough reading matter to locate the edifice, to indicate the requirements laid down and how they have been met, and to point out whatever we find deserving of praise in the results attained. It goes without saying that our reports will be made in the most eclectic spirit. We shall submit works of the greatest diversity, both as to their purpose and in their style, provided always that each in its way possess an interesting feature.

On the present occasion we will deal with a couple of transformed buildings in the Louis XV. style. They are the work of M. Sibien. M. Sibien was entrusted with the construction of the new Hôtel Regina, which is located at the corner of the Rue de Rivoli and the Place des Pyramides. The plan of the façades of the Rue de Rivoli was fixed upon, *ne varietur*, at the time the street was made. All the fronts are built on the same model; ground floor with an arcade covering the sidewalk; very low entresol under the arcade; high first floor; two other floors of medium height, and attics. Even the dimensions of the windows were specified. Consequently, there was nothing of an interesting character to be done for the Hôtel Regina as regards the outside. The only modification permitted was the abolition of the entresol, in order to give greater

height to the ground floor, and this was done. Within, the architect had more freedom, but he could not alter the arrangement of the upper floors, nor carry the building any higher. He had to be contented with four stories of bedrooms. Ye American architects, who erect hotels of fourteen, sixteen and twenty stories, what say ye of these narrow limits? Four stories and no more! The architect had full scope only with respect to the ground floor. Now, in such a spot as this, the best part of the Rue de Rivoli, having the Louvre Palace opposite and being hampered by the thick pillars of the arcade, it would have been paradoxical to attempt anything in modern style. M. Sibien very wisely confined himself to a free adaptation of ancient styles; but by the exercise of taste and moderation he has produced an interesting work.

Fig. No. 1 shows the entrance-hall, which faces upon the small Place des Pyramides. As is seen, the plan of having large bays, with merely a moulding and, on the crown, a more ornate cartouche, is quite simple in design and not without grandeur. A deep channel with decorative motives connects the walls with the ceiling, which is not loaded with rosework and the like, but extends free of all ornament. The body of the hall is entirely white. The landing at the entresol, looking out upon the Rue des Pyramides, has a balustrade in the same style as the decorations. The doors and windows are filled with glazed paneling, in which we find the same good taste as in the rest of the work. We may add, as marking an interesting date in the importation of American architectural ideas into Europe, that the hall of the Hôtel Regina is the first to be provided with one of those circular doors so commonly employed in the United States.

Fig. No. 2 affords a view of a small waiting-room, and especially of the fine wood carvings which adorn the arch of the door. The design of it is in style, but nowadays one does not often see the Louis XV. treated with such impeccable taste, such freedom from complication in the motives, and such an excellent notion of relief.

Fig. No. 3 is that of a drawing-room, on the Rue de Rivoli. The frieze on the ceiling, the design of the chimneypiece panel, and that of the chandelier, are graceful. The inside of the large panels is filled with silk. This method of decoration is difficult to apply, and does not usually turn out well. In the first place, it should be used generally in the room in which it is employed, and not merely for the large panels. The panel alongside the window is empty. Why? Secondly, these dark-colored panels are out of harmony with the rest of the room, which, like all the ground floor, is in white, which constitutes its originality and its charm. Red or blue hangings are scarcely tolerable in a white frame—in fact, the reverse should be the case, namely, strong tones for the solid frame,

FIG. 2.—WAITING ROOM, HOTEL REGINA.

FIG. 3.—DRAWING ROOM, HOTEL REGINA.

FIG. 4.—THE RESTAURANT, HOTEL REGINA.

such as wood, stone or stucco, and soft ones inside, where stuffs are employed. Here it is the contrary: a white frame and a strong color within. The decoration of Louis XV. or Louis XVI. panels is, in truth, an extremely delicate matter. If one avoids the fault just mentioned, by putting quiet shades inside the panels, the chances are very great that the effect produced will be pale, insipid, inharmonious and without emphasis. Almost the only suitable way to fill a panel is to put old tapestry there—tapestry of the period. But everybody does not possess ancient tapestries: they cost too much money. As to modern tapestries, they are execrable. The fact is that, in the eighteenth century, the creators of this style had discovered a charming system of decoration: that of painting the carvings of the wainscoting in a light color upon white. This was, for instance, the case in the decoration of the Louis XV. and Louis XVI. rooms in the Petit Trianon, where the wainscot carvings were in light green on a white ground. The effect must have been delicious. We have lost the practice of doing this, as of doing many other things. Our architects hardly care to venture upon the use of these tones, which need a specially skilful hand to make them a success. With them it is either an extravagance of decoration and gildings without end, or else the whole thing in white. At any rate, in the latter case there is nothing that shocks the eye. We know that the Trianon wainscotings were colored in gray by some ignorant architects of the time of Louis Philippe. We may be sure that they were the grandees of their day—professors at the *Ecole des Beaux-Arts*, members of juries, and so on—and that they had the same instinctive horror of color, which was reputed barbarian and mediæval, as has had all our neo-classic school. The decoration of the Petit Trianon has remained gray.

The next figure (No. 4) shows the restaurant. This room is much more ornate. The panels connecting the corners, and also the spaces between the bays, are painted.

The fifth illustration gives the dining-room, which occupies the place of the courtyards of the two houses which were transformed into the Hôtel Regina. Here the modern style had been adopted. The decorative motive is painted on the walls and extends in the form of bowers of leaves. These are certainly not sufficiently stylized to appear in this way upon a cornice; they have remained too vegetable and have not yet awakened to decorative life. We must also make some reservations as to the door frames, the glazed-earth tones of which are crude. The colored-glass roof of this dining-room is by Galland; but it seems to us to be one of the least successful of his productions. Much better work of his has been seen elsewhere.

* * *

FIG. 5.—THE DINING ROOM, HOTEL REGINA.

FIG. 6.—ROOM IN THE ESTABLISHMENT OF A LADIES' TAILOR, PLACE VENDOME, PARIS.
Architect, M. Sibien.

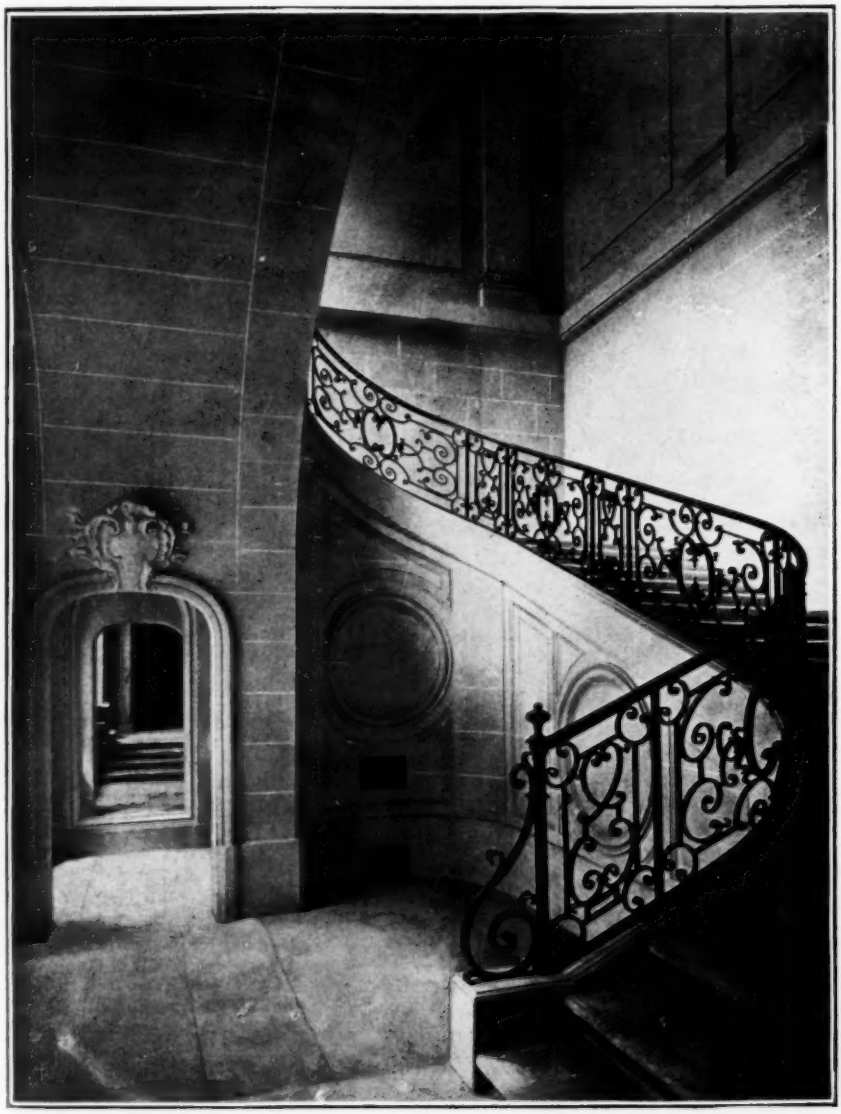


FIG. 7.—STAIRWAY LEADING TO THE SHOWROOMS IN THE ESTABLISHMENT OF A LADIES' TAILOR, PLACE VENDOME, PARIS, 18th CENTURY.

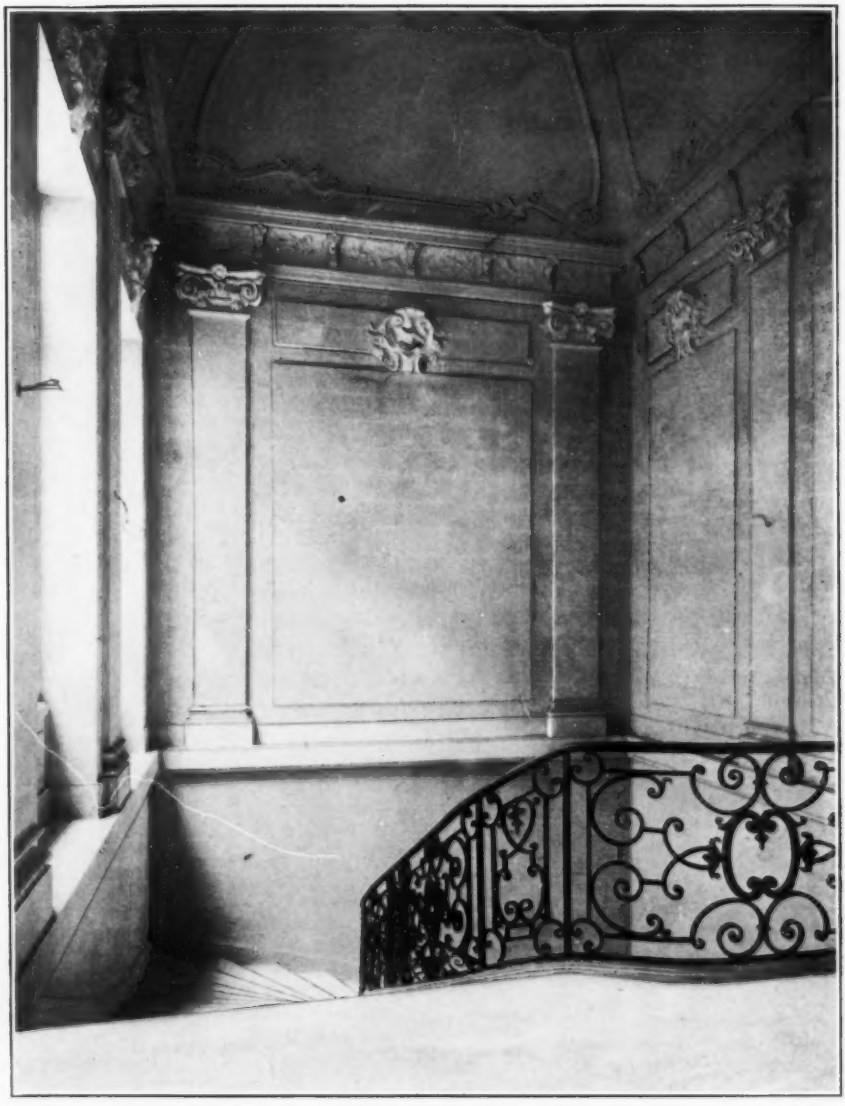


FIG. 8.—STAIR-HEAD IN THE SAME ESTABLISHMENT, PLACE VENDÔME, PARIS.

Decorations by M. Sibon.

The same architect has had the task of arranging a portion of the former office of the Military Governor of Paris, situated in the Place Vendôme, which is now the business premises of a leading ladies' tailor. Here, more than anywhere else, modern style was out of the question. In such a pleasant, old-world spot as the Place Vendôme there was no room for anything but light, graceful adaptations of ancient style. M. Sibien has planned these with the same good taste to which the Hôtel Regina bears witness. We give as an example the delicious Louis XV. salon shown in Fig. 6. He has kept to his favorite tone—white upon white. One could wish that a Boucher or a Fragonard had painted the pictures that are over the doors, but that sort of thing is not so easily reconstituted as are friezes, foliage and arabesques.

As we are speaking of the Place Vendôme, we cannot forgo the pleasure of giving the readers of the "Architectural Record" an illustration of the staircase leading to the showrooms of this *couturier* (Fig. 7). Of course it is ancient. Where in modern houses could we find the same ample and majestic curve that we see in these stairs, or the same broad, easy steps? It is really a fine specimen of staircase of an eighteenth century mansion, with a forged-iron balustrade that is at once solid and elegant. In the cramped houses of the present day what is the staircase becoming? The elevator has dealt it a mortal blow. In the steel-framed houses of the United States it is no longer anything more than a formality insisted upon by the Fire Department, and in private houses is nearly always built of wood. Few landlords would be so generous as to permit of the erection of a staircase like the one here shown. Let us salute its photograph, for it is becoming a thing of the past, like the hand-carved waiscoting which once embellished these apartments.

Our last figure (8) is that of the stair-head, with the decoration that has been applied by M. Sibien. We do not quite see the object of the double false panel and its ornamentation, nor of the decorated ceiling. Probably the landlord did not consider that the proverb, "Beauty unadorned adorned the most," was applicable here. Very few persons are content with quiet, sober things; but there is a saying of ours that "le mieux est l'ennemi du bien," and we think it is exemplified in the present instance.

Jean Schopfer.

BACHELOR APARTMENT HOUSE.

No. 22 East 31st Street, New York City.

Israels & Harder, Architects.

Note.—A typical non-fireproof bachelor apartment house erected on a single lot.

NEW YORK APARTMENT HOUSES.

TO the New Yorker of thirty years ago the apartment house was an exotic. Every good Knickerbocker, with even the most modest pretensions, considered it his duty to house his family within four wells wherein he would be the sole lord and master; and the highest reach of his ambition was a "brownstone front."

Since that period New York has grown from a provincial city to the position of the metropolis of the western world; but although the population of the city has increased by leaps and bounds, its topography allowed for growth in but one direction, and the inconvenience due to insufficient methods of transit aggravated the difficulty and compelled a large portion of the population to make their homes in inaccessible localities. To meet these conditions the apartment house was introduced, and with its advent an almost unlimited area (in a vertical direction at least) was made available for dwellings in desirable neighborhoods. To-day New York is a city of apartments.

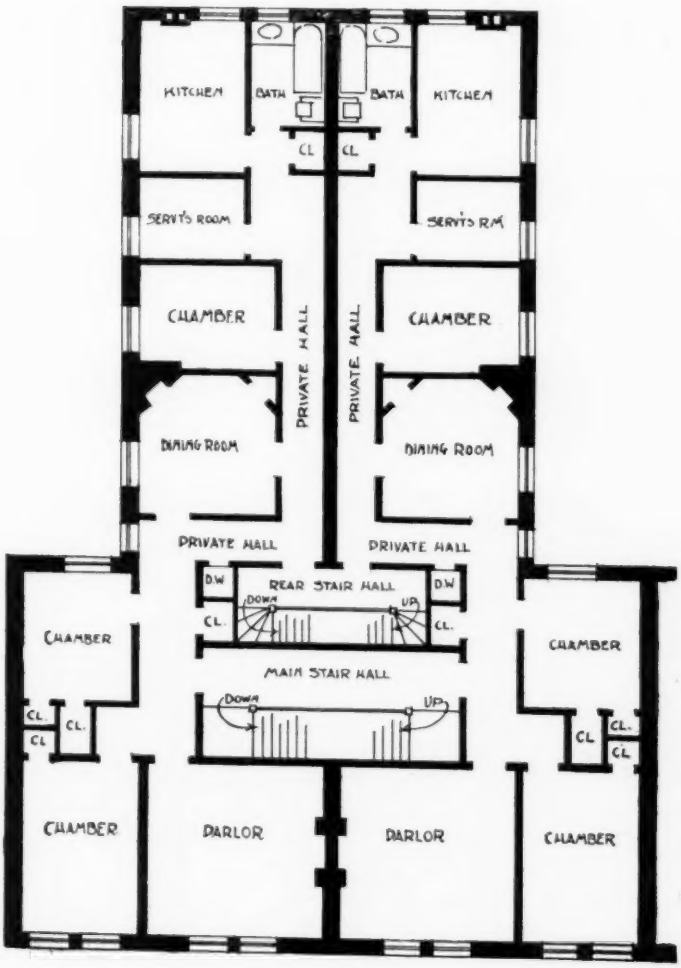
As "they order these matters better in France," it was but natural that the designer of the first apartment house should turn to Paris for his model, and it therefore fell to the lot of the late Richard M. Hunt, whose French training (rare at that time) made him familiar with the problem, to construct the "Stuyvesant Apartments" on the south side of Eighteenth street, between Third avenue and Irving place, in 1869.

For some years these houses stood in lonely grandeur as the sole example in the city of dwellings of the better class designed for the use of a number of families under a single roof, and that they were looked upon at that time as something thoroughly foreign to our civilization is indicated by the fact that they were popularly known as "The French Flats" for an extended period. The success of this venture and the increasing demands of an ever-pressing population, soon caused alterations of many old dwellings into apartments, and it was in 1871 that the second important venture was essayed by the erection of what was then known as the "Stephens Apartment House," since altered into the "Victoria Hotel." This was also designed by Mr. Hunt, and being more ambitious in scope and, appealing to a wealthier class of tenants, it was supposed to embody all of the good features of its French prototypes plus the American improvements. In the years following these pioneer ventures, Mr. H. J. Hardenberg constructed the "Dakota" for the Clark Estate at Seventy-second street and Central Park West, and the erection of the "Chelsea" in Twenty-third street between Seventh and Eighth avenues, and the "Navarro

STUYVESANT APARTMENT HOUSE.

No. 142 East 18th Street, New York City.
Richard M. Hunt, Architect.

Note.—The first apartment house erected in New York City.



-TYPICAL-FLOOR-PLAN-
STUYVESANT APARTMENT BUILDING
142 EAST 18TH ST.
R.M. HUNT-ARCHITECT.

Apartments" at Fifty-eighth and Fifty-ninth streets and Seventh avenue, designed by the firm of Hubert, Pirsson & Hoddick, further astonished New Yorkers by their enormous size. Although it is to these large and important operations to which one must look as indicative of the development of the New York apartment, they can by no means be taken as a fair example of types that were possible to the early designers of this class of New York dwellings. During this period of development, the average architect was compelled to wrestle with the same problem upon ordinary city lots of twenty-five by one hundred feet or multiples of the same size, and all of the elements which had entered not only into the problem of these larger houses, but also into the tenement house problem as well, were even more exacting in these dwellings; which, while appealing to a better class of tenants than the average "tenement" (using the word in its general and not its legal sense) were at the same time compelled to provide superior accommodations. Of these early ventures the less said the better. The excellent conditions for concentrated light possible in the larger operations were practically prohibited on the smaller area, and although the types of many of the larger houses were such that they may still be looked upon as generally successful examples, the ordinary types upon inside lots were poorly lighted, inconvenient and unsatisfactory; and these conditions were exaggerated by the fact that fully ninety per cent. of the apartments were erected by speculators, whose principal desire was to show as large a rentable area as possible to their prospective buyers, irrespective of the disposition of the space.

In fact, it is only within the last few years that the building public has begun to realize that a successful apartment is impossible on a single New York lot, unless the conditions existing upon abutting properties are such as to insure a reasonable certainty of permanent light and air.

In considering the basic reasons for the various types of apartments, one should always bear in mind that the law has consistently failed to make any distinction between a "tenement" and the class of buildings generally referred to as "apartments;" and it therefore follows that a study of the changes which have taken place in the types of apartments must be accompanied by a parallel application of the legal status of the tenement under the various building laws and supplementary statutes which have been enacted from time to time, mainly to meet the demands of the "tenement house problem."

This may seem at first blush somewhat unjust, considering the different conditions under which "tenements" are erected; but, after all, the "tenement," in its generally accepted sense, is simply a city

habitation for housing the greatest number of people at a minimum rental, and an "apartment" house a better equipped tenement, with greater advantages and conveniences built in a neighborhood commanding larger rentals. The object which each strives for is identical; they differ only in detail.

The conditions in the neighborhood, which make the apartment possible are not necessarily permanent, and degeneration from the better to the poorer type of house is always possible with the ever-changing conditions in a large city.

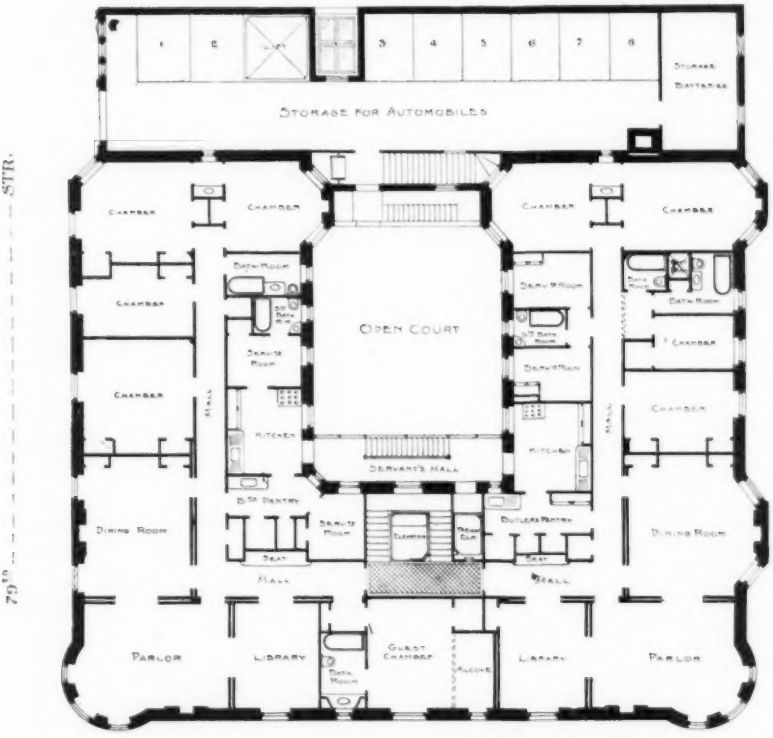
With the introduction of the present "Building Code," however, an inconsistency did arise in the application of this principle which is undoubtedly causing unnecessary hardship in some minor particulars to designers of the newest types of apartments. The same causes which originally called the apartment house into being have by increasing pressure, coupled with the troubles of housekeeping in New York due to the "servant girl question," caused the construction of bachelor or non-housekeeping apartments, particularly in the heart of the city; and although a large and increasing number of these houses were being erected at the time of the adoption to the present code in 1899, the Code Commissioners did not recognize their existence and left it to the Commissioner of Buildings to give them a legal status. This particular situation may be best shown by reference to the definition of an apartment house in Section 9 of the Code, which states that "An apartment house shall be taken to mean and include a home or residence for three or more families, living independently of each other, and in which every such family or household shall have provided for it a kitchen, set bath tub and water closet, separate and apart from each other."

A bachelor or non-housekeeping apartment certainly does not come under this definition, and a hotel according to the following section must have "a general public dining room or café or both."

In the average house of this character meals are served only in the tenants' rooms, and as no dining room is provided, it cannot legally be classed as a hotel.

The Building Department, however, has ruled that such houses properly come under the head of apartments, and although of the two possible rulings this was by far the most liberal, it compels the designers of bachelor apartments to comply with certain tenement restrictions as to halls and stairs clearly framed with reference to the mixed population inhabiting a building which is a tenement in fact as well as in name.

Not only has the question of planning of apartments been mainly influenced by the legal status of these structures, but the constructive methods and heights have also been in a great measure similarly dictated by the statutes in force during the various periods

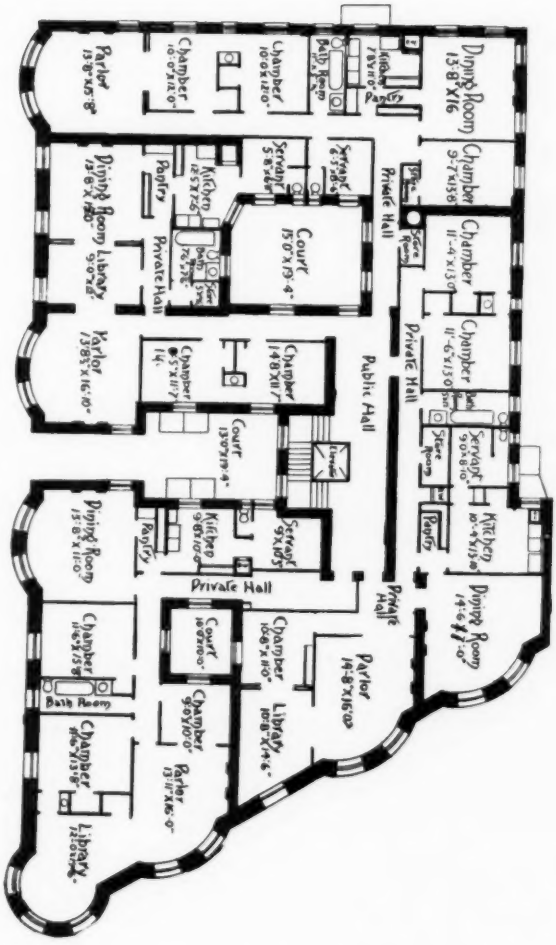


FLOOR PLAN OF AN APARTMENT HOUSE.

Northwest corner West End Avenue and 79th Street, New York City.

Wm. B. Franke, Architect.

since the introduction of these houses in New York. A good rent-paying property, being naturally one of the main considerations to be striven for, apartments have in their construction naturally followed the lines of the least financial resistance, and while the introduction of the electric elevators and the extension of the public service of current has made the upper floors the most lucrative portion of the house, the limit of height for non-fireproof construction has acted as a counter-irritant, and under the Code as now in force the average apartment will continue to be constructed seven stories in height, with the two lower floors fireproof. In fact, to one familiar with the history of the building laws in New York, the period of construction of the average house may often be told with reasonable accuracy by even a casual glance at the exterior, and to-day the comparative economy with which the prevailing type of a seven-story house may be erected within the limit of seventy-five feet in height is causing many radical improve-



FLOOR PLAN OF THE EL NIDO.

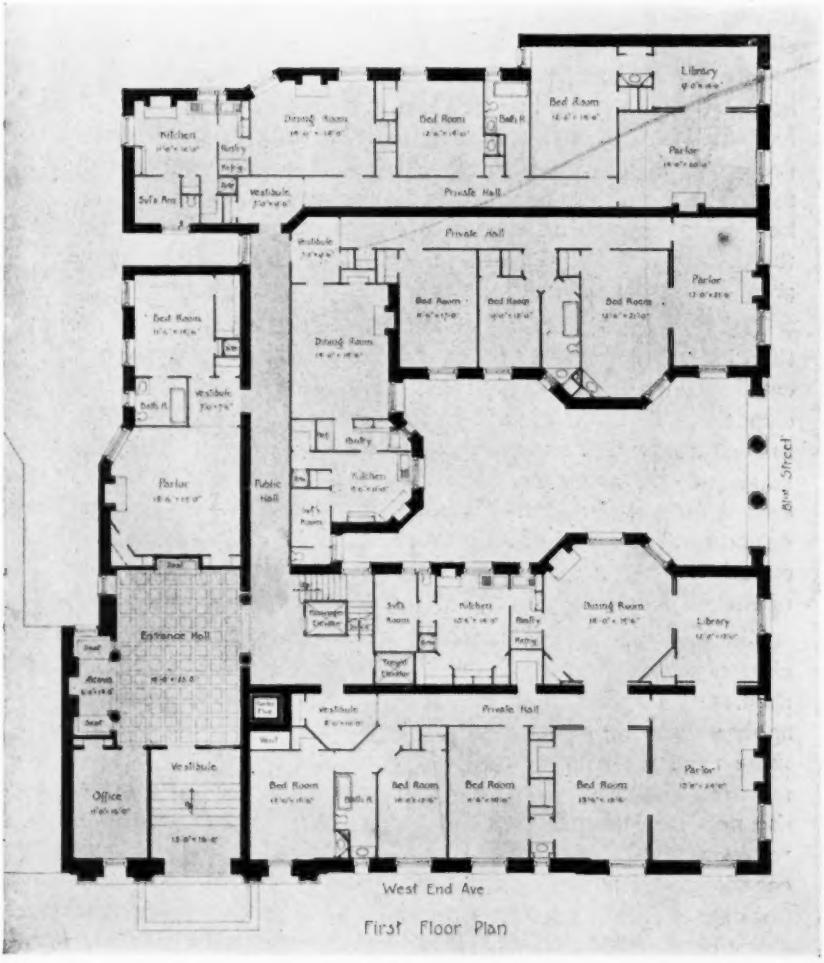
116th Street and Seventh Avenue, New York City.

APARTMENT HOUSE.

Northeast corner 81st Street and West End Avenue, New York City.

Little & O'Connor, Architects

Note.—A representative contemporary apartment house with a court opening on the street



FLOOR PLAN OF APARTMENT HOUSE.

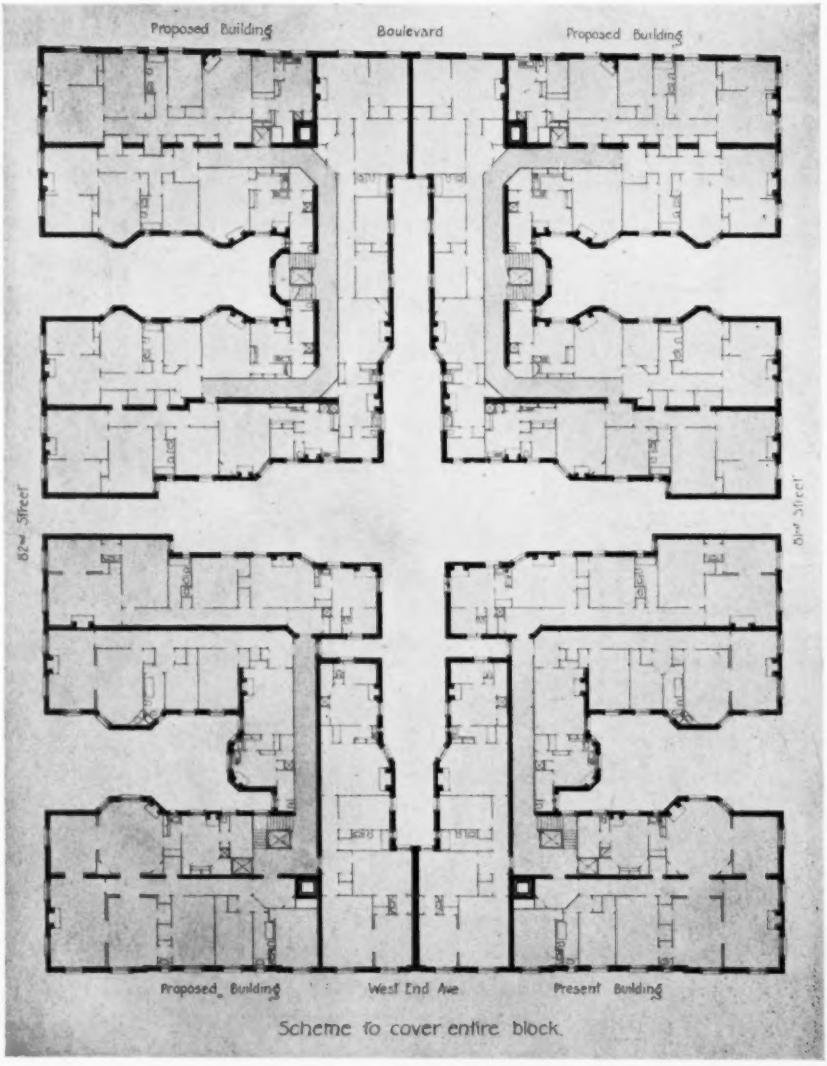
Northeast corner 81st Street and West End Avenue, New York City.

Little & O'Connor, Architects.

ments, together with the introduction of elevator service and many other conveniences in neighborhoods which but a few years ago were considered far too humble for luxuries of this character. The present law limits the height of non-fireproof houses to eighty-five feet, and allows the construction of a twelve-story fireproof structure to the height of one hundred and fifty feet upon a street eighty feet wide and a ten-story fireproof structure to the height of one hundred and twenty-five feet on a sixty foot street; while houses exceeding one hundred feet in height must be at least forty feet in width. Notwithstanding that the limit of height for non-fireproof construction is eighty-five feet, it is not found economical to carry the average seven-story house beyond seventy-five feet in height for the reason that a greater vertical measurement compels the thickening of all the walls, and the consequent loss of rentable area coupled with additional cost.

The successful planning of an apartment house in New York, therefore, involves first of all a thorough knowledge of the complicated statutes and regulations governing their construction, and the disposition of the minimum free air space required under the law in such a manner as to give the ultimate amount of light with the maximum rentable area. For this purpose a careful study of the environment is absolutely essential, not only in its bearing upon the structure at the time of its erection, but also with particular reference to its permanency, especially in streets where the character of the neighborhood is undergoing alteration.

The disposition of this free air space is again governed by the class of apartments which are being planned, and it will be found absolutely impossible to establish any general rule which would apply only to the average of symmetrical lots, without finding that these rules would vary radically even for lots of the same shape and area when applied to large or small apartments. On account of the necessity of grouping the entrances to the various suites of rooms around the space devoted to the public halls and elevator, economy of construction and service as well as the maximum use of floor space for the purpose of rentable area, demand that this public space be as small as the necessities of the particular case will permit, as far as is consistent with the efficient handling of the traffic; and a large central court, so desirable for purposes of light and air, generally has as its complement the long and objectionable public halls, which becomes necessary in order to reach the apartments on the opposite side of the court. This feature may be obviated, it is true, by the use of more than one stairway, but by so doing the cost of both construction and maintenance is greatly increased in structures not legally requiring it.

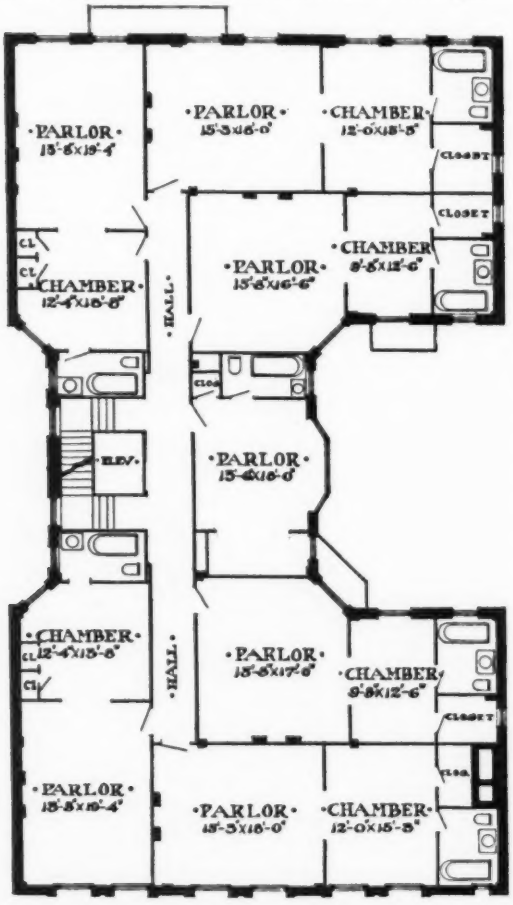


SCHEME FOR AN APARTMENT HOUSE TO COVER THE ENTIRE BLOCK.

Between West End Avenue and Broadway, 81st and 82d Streets.

Little & O'Connor, Architects.

A concentration of open court space upon one side of the building with the court enclosed on but three sides will therefore generally be found the most desirable arrangement on all lots fifty feet wide or over as giving the maximum amount of concentration with a minimum area devoted to public halls.



THE IROQUOIS.

53 West 44th Street, New York City.

H. B. Mulliken, Architect.

In this and similar cases a small court will undoubtedly be found necessary on the opposite side; but as in the plan of the Iroquois Apartment, shown in the illustrations, it may be used to light and ventilate only a small number of rooms, while the larger number of important apartments are well provided for in the more important court. Another advantage from the use of larger courts, and particularly those opening upon the street, is that they may be treated architecturally and in harmony with the façade, and by giving these courts an outlet in the direction of the street, the number of inside rooms is materially decreased and the owner's income increased accordingly.

In lots less than forty feet in width it will generally be found that the large square or centre court is impracticable, and it is then that the architect frequently finds that, being compelled to provide light on both sides upon a long narrow lot, he is forced to use similarly shaped courts, which unfortunately depend mainly upon the

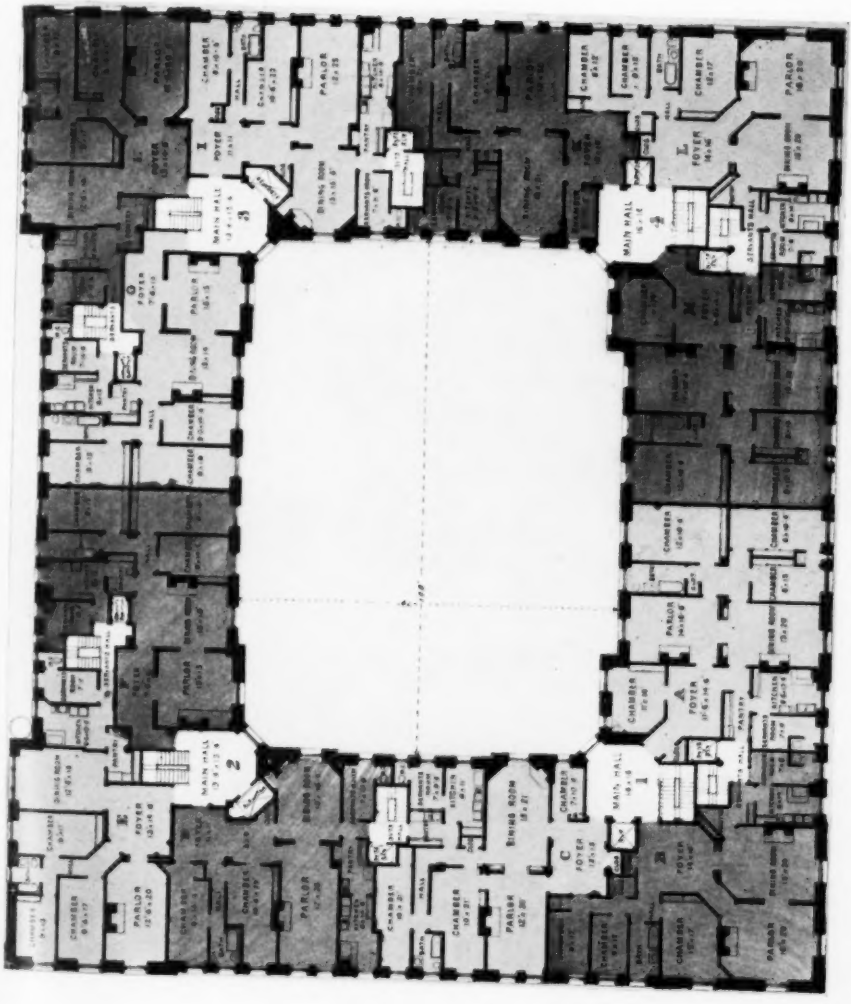
THE CHERBOURG.

Central Park West and 92d Street, New York City. Neville & Bagge, Architects.

GRAHAM COURT.

Seventh Avenue, 116th to 117th Street, New York City. Clinton & Russell, Architects.

Note.—One of the largest apartment houses in New York. Built around an interior court. (See page 491.)



PLAN OF GRAHAM COURT.
(See page 490.)

Note.—One of the largest apartment houses in New York. Built around an interior court. (See page 491.)

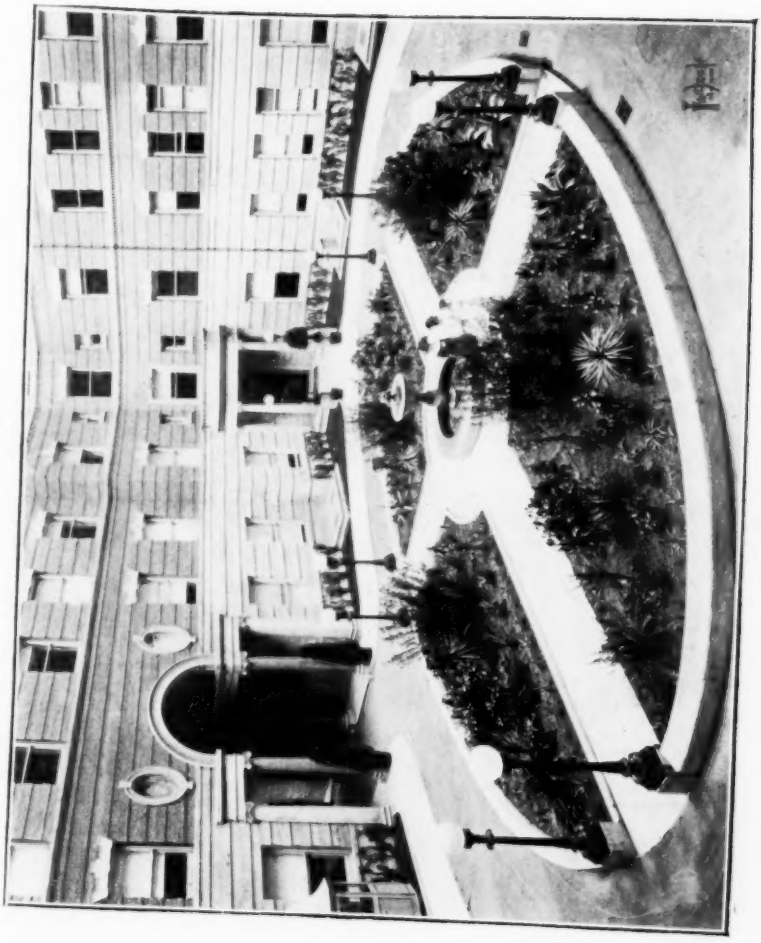
conditions obtaining upon adjoining lots for their effectiveness. Even this might be avoided to some extent by the introduction of a side street court, if the objection could be met that by so placing the court, certain apartments are prevented from securing windows directly upon the street, and are compelled to have an outlook upon the blank and unfinished wall of the neighboring property.

On lots smaller than forty feet and more than twenty-five, economy of construction would, if possible, dictate the disposition of the courts in such a way as to eliminate most effectively the centre girder, whereas the only hope for the twenty-five foot house, except in locations where light from abutting properties may be permanently depended upon, is in the opening of street and yard courts enclosed on but three sides, which, notwithstanding their objectionable features, positively insure good light and air.

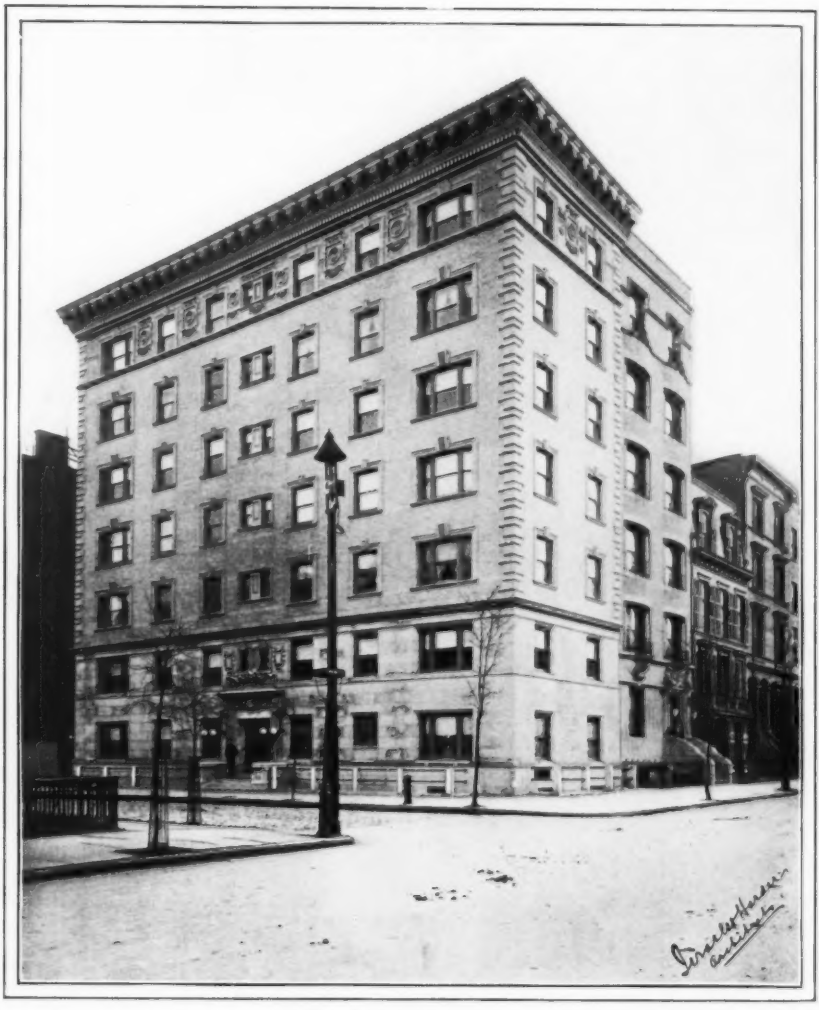
The problem presented on corner lots is naturally very much simpler of solution, and even upon a single ordinary lot of the average width a reasonably satisfactory apartment plan does not present any insurmountable difficulties.

A careful study of the requirements of the class of tenants making their homes in the vicinity where the apartment is to be erected is also absolutely essential to the successful plan, and this knowledge frequently involves an amount of exact data in the real estate field, which may generally be best obtained from some real estate agent doing business in the neighborhood.

An apartment may fulfil every possible architectural requirement and be a failure. The truly successful house must meet both artistic and business demands, and when deficient in the latter it is even more a failure than when lacking in the former. The architect must not only strive to meet successfully the demands of the people to whom he appeals, but he must also meet successfully the requirements of his own neighborhood as well. And he must do all this in both an economical and artistic manner. Some of these business shortcomings are becoming particularly noticeable in the present French tendency of our architecture, not only in our exterior design but in our planning as well. Plans suited to the life of continental Europe may be absolutely out of keeping with the methods of life obtaining in an American city, while the many conveniences with which an American apartment is equipped and which are generally lacking in their European prototypes, considered together with the digit of New York lots, have dictated new arrangements, to which the general plan of the Parisian apartment is thoroughly unsuited. An example of this error may be seen in a number of the early apartments which were provided with an office for a "concierge." This functionary was, however, soon dispensed with, as the average



GRAHAM COURT.
View of Interior Court.

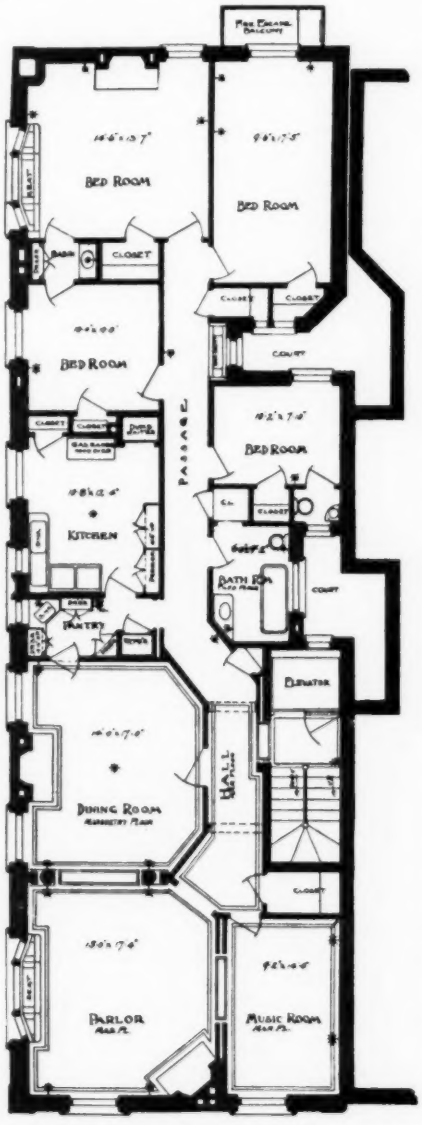


APARTMENT HOUSE.

No. 78 Irving Place, New York City. Israels & Harder, Architects.

Note.—A non-fireproof apartment house built on a corner lot.

American looked upon her as a person whose particular business it was to interfere in his private affairs and to look for tips. He protested and the concierge was eliminated. The apartment house, like all other architectural developments, must meet the requirements of the civilization to which it appeals—it cannot lead it.



FLOOR PLAN OF NO. 78 IRVING PLACE.
(See page 494.)

Having become familiar with the habits and desires of the prospective tenant, the architect of the successful apartment will find it necessary to meet these requirements by the most scrupulous attention to details of the most minute character. The usual disposition of the spaces upon axial lines necessary to obtain any plan which is architecturally satisfactory, is not sufficient for the proper arrangement of the limited areas at his disposal. The wall spaces in particular are limited, and the door and window openings and even the position of the lighting must be so disposed as to allow for the proper placing of the necessary and usual furniture. A room may have quite sufficient area for habitable purposes, with its openings and other accessories so arranged that the proper placing of furniture is impossible, while even a small room properly arranged with sufficient concentrated wall space may be used to advantage, when a much larger area would be valueless, if not planned with a proper regard for the contents of the room. The disposition of the light-

ing must also be arranged with a similar reference to the movable fixtures, and such outlets should not be placed centrally in wall spaces which might be otherwise used. Even the swing of doors, the placing of the telephone and bells, should be carefully studied with the same object in view, and in bedrooms in particular a concentration of wall space should always be obtained, preferably in the portion of the room obtaining the poorest light where a bed may be placed parallel with the wall. These details may seem trivial to the average reader who has not studied the problem, but the importance of even inches in the apartment house may be inferred from the general tendency now in vogue towards the omission of furring and the substitution of various waterproof preparations on the walls, mainly on account of the two inches gained thereby. The disposition of the rooms themselves in relation to one another and to the entrance to the apartment from the public hall is naturally subject to considerable variation, and this question is also dependent upon the class of apartment being considered. In all classes, however, it is desirable to arrange the drawing room or parlor in such a position that it shall be easy of access from the main entrance leading to the public hall, and in the larger apartments where the long private hall is unavoidable, if the drawing room be so arranged, the visitors may be ushered directly into this room, without disturbing the privacy of the family by being compelled to pass the sleeping apartments.

For similar reasons it is desirable that the music room and library, if either or both be provided, and the dining room as well, should adjoin the drawing room, the butler's pantry being placed between the dining room and the kitchen and the door from this pantry to the public hall forming the only means of exit for the servants. In this manner the kitchen offices are isolated in as complete a manner as possible, an object which is particularly desirable and which is easily obtained, if, as is frequently the case in the average apartment, but one servant's room is provided, communicating with the hall only through the kitchen. This arrangement groups the rooms to which strangers might have access in the front of the apartment, and by so doing not only enables the host to use his three most important rooms "en suite" for the purpose of social functions, but also places the bedrooms in the rear in the position of the greatest seclusion. This grouping is frequently made undesirable, however, by the position of the light courts upon which the dining room, which is usually the room once removed from the front, is apt to be placed; but if it can possibly be so arranged, it is immeasurably superior to the system which places the dining room to the rear of the apartment, causing guests to traverse a long and comparatively narrow hall on their way to

APARTMENT HOUSE.

Madison Avenue, southeast corner of 66th Street, New York City.
Louis Korn, Architect.

the table. This objection can also be even more strongly made against the system which places the main entrance near the rear of the apartment, even though a small reception room be situated close by for the casual visitor.

It will be readily recognized that these general criticisms apply mainly to the housekeeping apartment of average size; for in treating larger and more ambitious spaces it is frequently possible to totally eliminate the long private hall and to group the main portions of the apartment around a well lighted foyer. Under these conditions, rear servants' stairs as well as an elevator for the use of the servants, and general servants' quarters in another portion of the house enable the designer to isolate the kitchen offices without causing them to be placed at too great a distance from the dining room.

In the small non-housekeeping or so-called bachelor apartment the problem is much simpler on account of the availability of the

APARTMENT HOUSE.

(See page 499.)

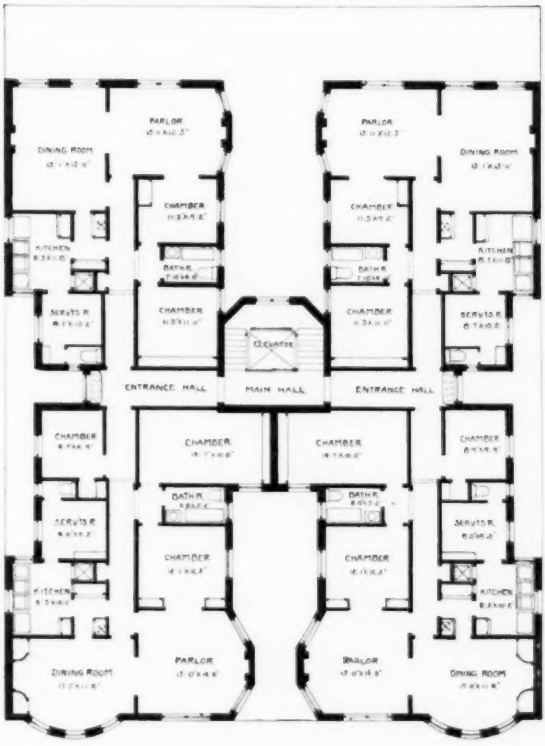
55th Street, north side, 100 feet west of Seventh Avenue, New York

G. A. Schellenger, Architect.

space for rooms which in the housekeeping apartment must be placed in the halls, and as it is frequently only necessary to enter the parlor from the public hall, the adjoining rooms may in their turn be grouped around the parlor, although if but one bathroom and two bedrooms be provided it is absolutely essential that access be had to the bath from each room without passing through the other.

Economy of planning naturally demands as large a concentration of plumbing apparatus as the design will reasonably allow, although the total cost of the plumbing in relation to that of the entire structure is of such comparatively small importance that considerable extra expenditure may be safely made in this direction, if by so doing the convenience of the plan is enhanced.

An interesting experiment was tried some years ago in an apartment constructed at the northeast corner of Madison avenue and



FLOOR PLAN OF APARTMENT HOUSE.

(See page 498.)

55th Street, north side, 100 feet west of Seventh Avenue, New York City.

Thirtieth street of making one apartment occupy space on two floors with the chambers on the upper story. That the experiment has not been repeated is presumptive evidence that it was not considered successful, as it neutralized one of the principal advantages claimed by the apartment dweller, namely, economy in housekeeping arrangements and service due to dwelling entirely upon one level.

Ample closet room is an important detail to be considered in the well planned apartment, and, proportionally speaking, this closet room should be furnished in an inverse ratio to the size of the apartment, as people living in but few rooms have comparatively a larger quantity of personal effects for which they must find storage space. The apartments constructed a few years ago were particularly deficient in this respect, but the more modern house seems to have met this difficulty more thoroughly.

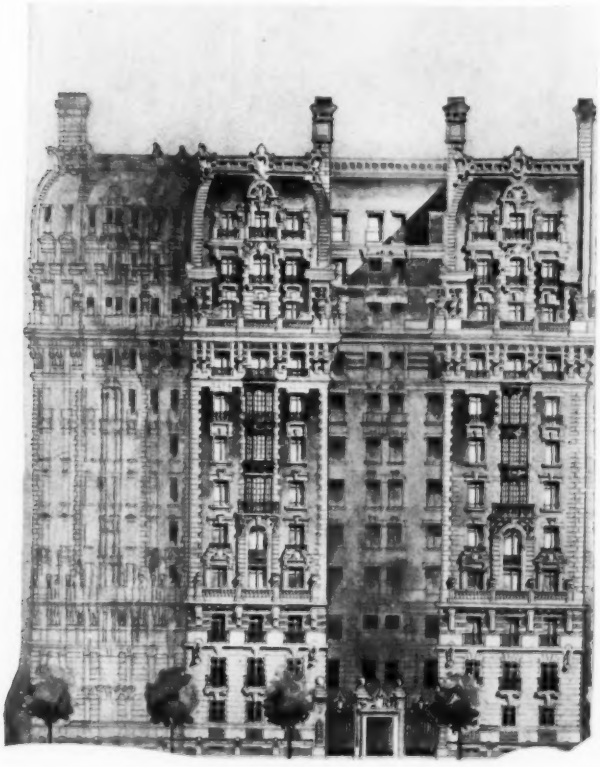
Other tendencies as well as those which have been mentioned, and which are in accord with the spirit of the age, namely, the

THE NEW ASTOR APARTMENT HOUSE.
Fifth Avenue and 55th Street, New York City. Livingston & Trowbridge, Architects.

Note.—Type of an apartment house designed for wealthy tenants.

FLOOR PLAN OF ASTOR HOTEL.
(See page 500.)

tendency towards coöperative living, have also had an influence upon the desire of our population to dwell in apartments instead of in single houses. The modern and up-to-date apartment offers to its tenants a measure of luxury and convenience totally beyond the reach of the man of average income living under his own "vine and



APARTMENT HOUSE.
Broadway, northeast corner of 71st Street, New York City.
Janes & Leo, Architects.

fig tree." Here he has provided for him telephones, heat, hot water service, refrigeration, gas for fuel, storage for his bicycle, filtering plants, indoor laundry and drying apparatus, and frequently a roof garden, all of which tend towards the most economical and convenient living at the lowest cost. Coal and ice bills are to him things unknown, and he may read of combinations on the part of "coal barons" and a "short ice crop" with the utmost

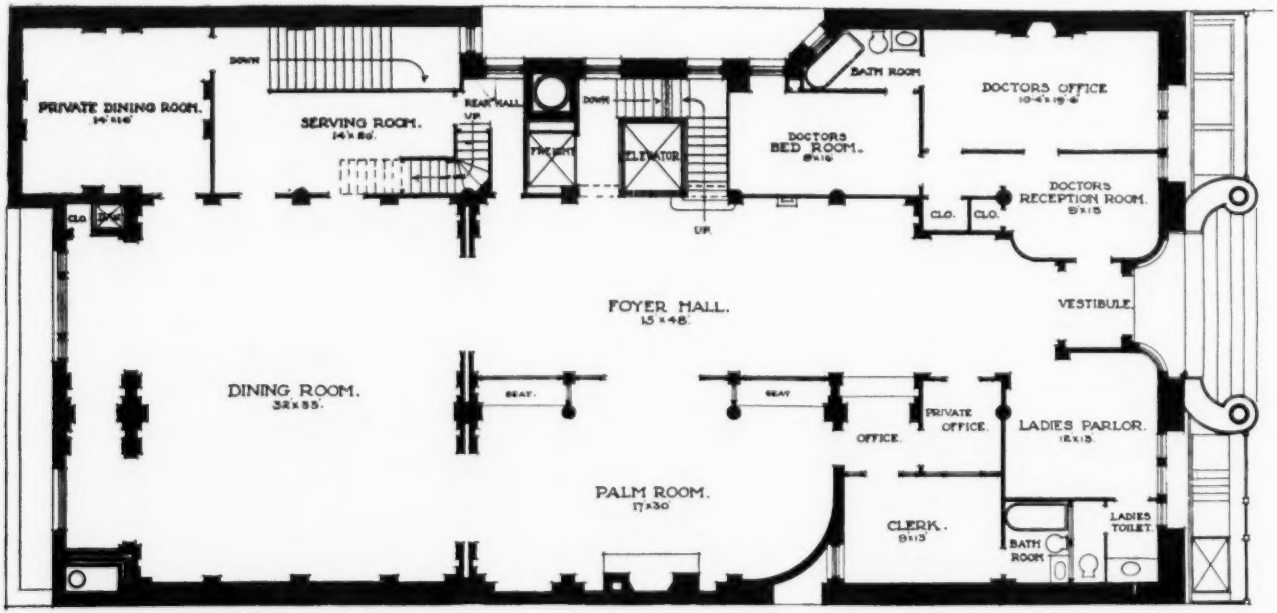
complacency, while in the non-housekeeping apartments, so many of which are now being erected, he is free from the continual annoyance of securing his own servants, and even in the house where no dining room is provided, his meals may be served to him in the privacy of his own apartments without the annoyance of housekeeping—while the superintendent acts as valet for a small fee and cares for his wardrobe.

The method of administration adopted in houses of this latter class has also tended to relieve this kind of apartments from the terror of the earlier types, namely, the janitor, as the superintendent is from the nature of his work a man of very different class from his progenitor, and instead of being simply a head servant, he occupies an executive position, paying all the wages of the attendants out of his own salary, and is therefore directly responsible for the management of the house, the service of meals being his private perquisite.

Architecturally considered, the New York apartment has progressed as steadily in design as it has in arrangements based upon matters of pure convenience. With the exception of the few prominent examples heretofore mentioned, the average apartment of the earlier type failed lamentably in both particulars; and while being underdone from a sanitary standpoint, were terribly overdone architecturally. One speculative builder of unpleasant memory, whose operations extended for many years from one end of the West Side to the other, amused himself for a long period by constructing blocks of houses which he had designed around the bankrupt stock of a terra cotta concern which he had purchased at bargain prices. From the monuments of his thrift which he has left as his legacy to the present generation, it is evident that his principal concern was to use his terra cotta irrespective of the position for which the pieces were originally intended. Capitals are frequently used as bases and vice versa, and the results may be better imagined than described. It was, however, from such beginnings that the modern apartment has developed to its present status of at least rational design, and the tendency to over decoration seems to have been successfully overcome even among the speculators who are still responsible for the greater number of apartments, particularly upon the upper West Side. For this improvement a considerable amount of credit is due to the firm of Neville & Bagge, who have been responsible for a large amount of work in the neighborhoods where the apartment flourishes, and although it may be impossible to point to any work of this firm which is superlatively excellent, they have succeeded by their numerous examples in raising the architectural standard of an entire neighborhood from one of debasement to at least of respectability.

HOTEL TOURAINE.

39th Street, North Side, Near 5th Avenue. Charles I. Berg, Architect.

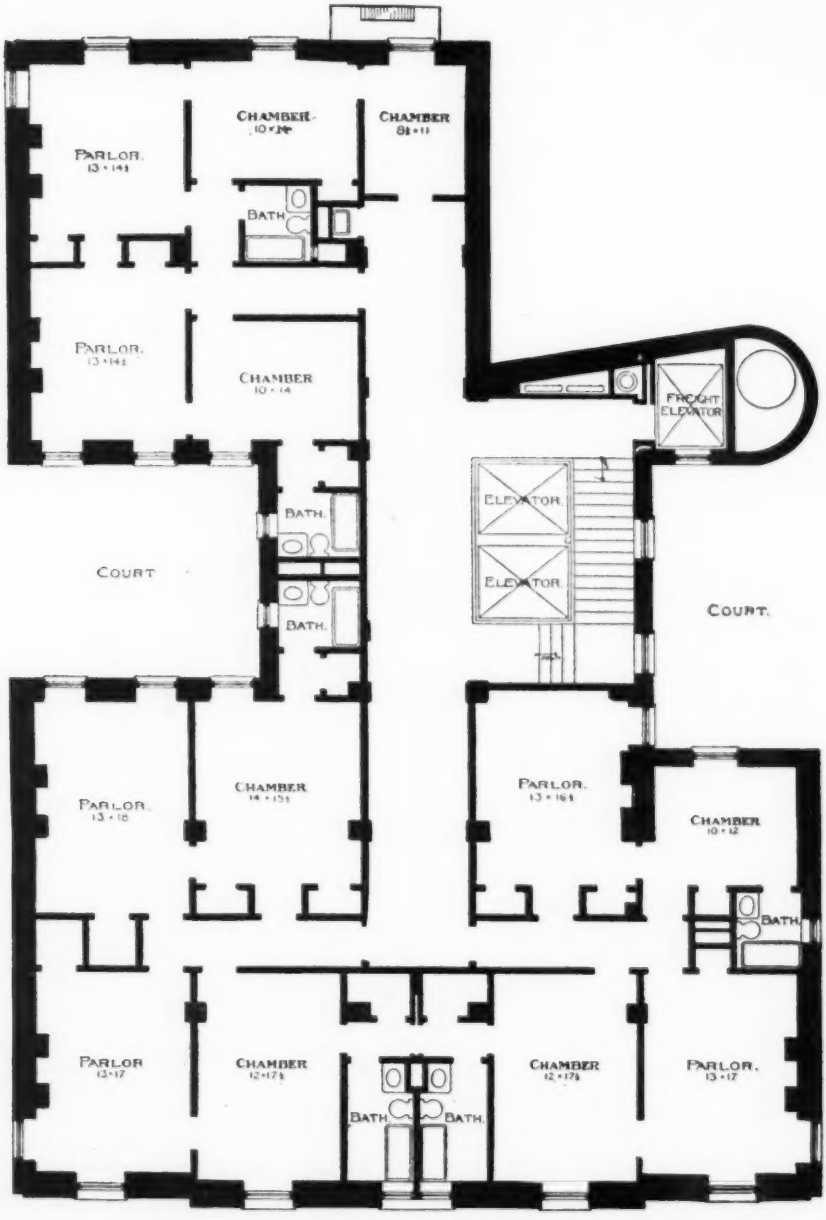


CHAS. I. BERG.
ARCHITECT.

·FIRST·FLOOR·PLAN·

SCALE

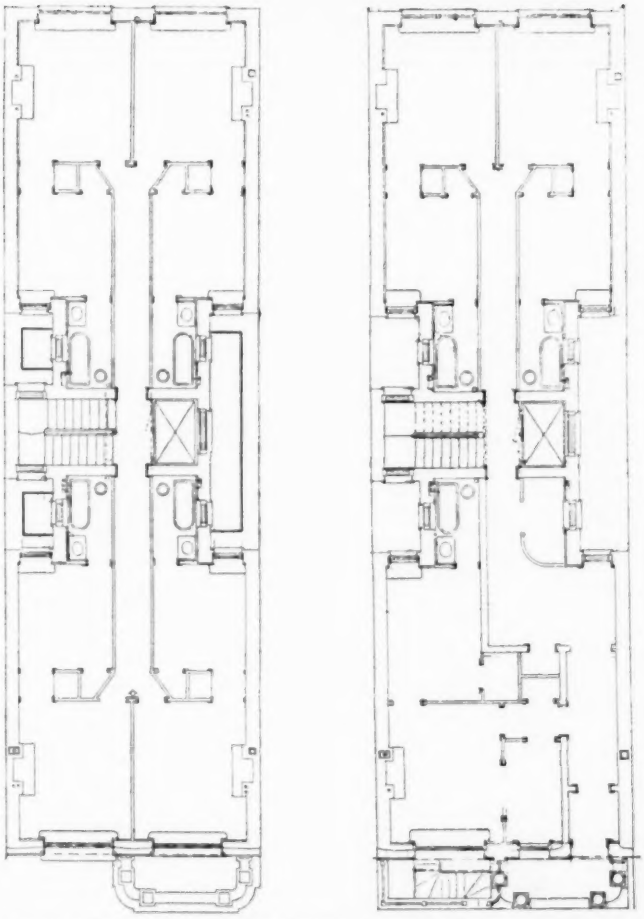
FIRST FLOOR PLAN, HOTEL TOURAINE.



FLOOR PLAN OF THE MARTINIQUE.

West 33d Street, New York City. H. J. Hardenbergh, Architect.

Note.—A typical contemporary apartment-hotel.



FLOOR PLAN OF THE CENTURY, A BACHELOR APARTMENT HOUSE AT 119 W. 45TH ST.

It is but natural that the same tendencies which have marked what has been properly termed elevator architecture in other classes of buildings, should be similarly present in the most successful apartment architecture, and the designs generally of the better class are therefore stamped by a general similarity of treatment best suited to the excessive heights which most of them attain, namely, a strongly marked stylobate generally two stories in height and treated in heavily coursed stone crowned by a heavy string course or balcony, the façade from that point to the top being treated as a whole and having the crowning story marked by a decorated treatment surmounted by a bold cornice, while a tendency towards wider but concentrated openings and more liberal

treatment of the piers tends to considerable more dignity than was the case in the restless fenestration so characteristic of the earlier work.

The business requirements of the situation have demanded an exceedingly bold and decorative treatment of the doorway and the carrying of a considerable decorative quality into the first story hall and vestibule, while many of the newer and larger houses have on account of their large street courts enabled their designers to divide their building vertically and to obtain an exceedingly satisfactory entrance court in the centre of the building.

As in other fields of architectural effort, the influence of the Ecole des Beaux Arts has made itself felt strongly in the exterior design of these houses as well as in their planning, and in the new addition to the Hotel Renaissance at Forty-fourth street and Fifth avenue, by Howard & Cauldwell, a Parisian corner has been transported bodily to New York, and, on account of its juxtaposition to the more tranquil design of the older portion of the same building, by Mr. Clarence Luce, it boldly challenges a comparison of the two schools, and seems to invite the criticism that while the older building answers rationally and honestly the demands of the situation and expresses its purpose in a delightful and dignified manner, its newer neighbor, with its mansard roof and general appearance of unsuitableness, fails in a large measure to give the idea of dignity and repose which is so strong a characteristic of Mr. Luce's design.

One of the most important causes which originally called the apartment house into being, namely, the want of rapid transit, is soon to be removed by the opening of the underground road. Had the old Broadway Arcade been constructed as was originally intended some years ago, apartment houses might have remained an exotic to this day. But the relief comes too late—and in our busy city many New Yorkers who have tasted the sweets of apartment house life, with its freedom from many of the vexations of housekeeping, will never wish to return to the older method of living. In the opinion of many New Yorkers the coöperation involved obtains the ultimate amount of comfort and convenience with the minimum effort. It follows a distinct tendency of this age of concentrated effort. It eliminates the individual for the common good. It will stay as part and parcel of New York life for all time.

Charles H. Israels.

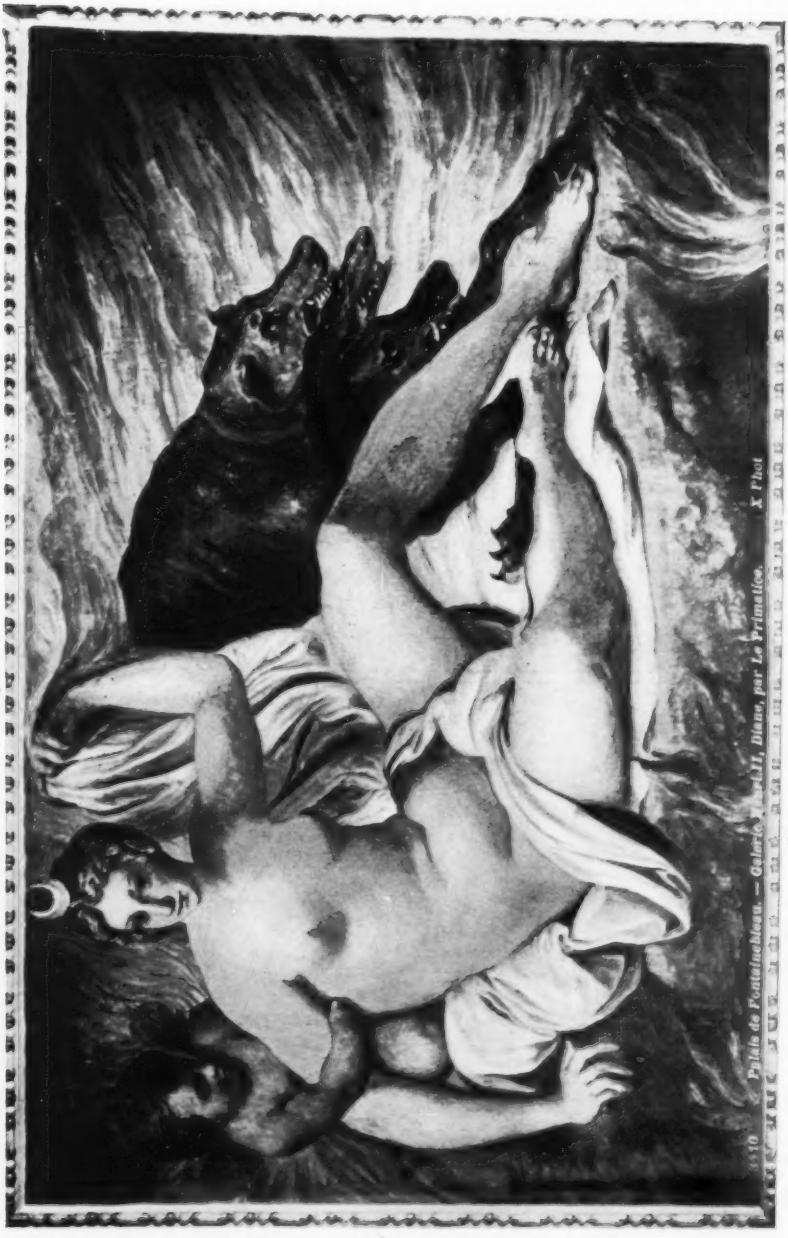
DIANA, BY PRIMATICCIO, GALLERY HENRY II., PALACE OF FONTAINEBLEAU.

MURAL PAINTING, AND A WORD TO ARCHITECTS.

WITHIN the past few years mural painting has played so important a part in the building projects of our architects, that it seems worth while to inform ourselves more fully regarding this tendency to ally painting with architecture. When I say ally painting with architecture, it is hastening matters—it did not at first achieve this, nor does it always, speaking strictly, accomplish this at present. It is what we hope it will eventually do. But while hoping for this, we trust, not too "far off divine event," it may be of interest to consider a little the nature of mural art, its demands upon the painter, its range and limitations.

With our advance in architecture and fine building, has come such a demand for this kind of embellishment that a group of mural painters has grown up amongst us. These men are working seriously, often with high ideals, for a public which does not always understand them or their efforts. This is not surprising, for they are employing a mode of artistic expression that, until recent years, there has been no call for here; although in the art history of the world it has occupied the minds and engaged the energies of some of the greatest masters. Correggio, at Parma; Angelo and Raphael at Rome; Veronese, Tintoretto, and lastly Tiepolo, at Venice, emblazoned palaces, adorned churches, and ornamented the houses of the great. France has long employed this hand-maiden to architecture, as witnesses the admirable and ingenious compositions that Primaticcio, imported by Francis I., has left on the walls and ceilings of the palace at Fontainebleau. We, too, imported Brumidi and other foreigners to do the Dome and Committee Rooms of the Capitol at Washington; but these works do not become any integral element of the structure, and stand rather as a concession to the demand for sumptuousness on the part of a vaguely aspiring public. The qualities required of the painter as a worker in mural art are not convincingly displayed in these attempts at decoration, and the works themselves are consequently no contribution of esthetic significance to the art we are discussing. Primaticcio did leave works of art at Fontainebleau as inspiring precedents. There is little or nothing to start us on the right road in these painted panels at Washington. Let us glance, then, at certain qualities demanded of the mural painter. It will help, perhaps, to clear up the situation and to create a public that will be more intelligently exacting in regard to what should stand for them as mural art. Too often, now, this public accepts that which is not decoration, that which does not ally itself with the architecture it is supposed to enhance—and, indeed, that which

often sins against those canons of art which should at all times control it. For only when so controlled does this art reach the distinction worthy to be called "fine." I believe, however, there is a world of inquiring thought to-day circling round this question of mural art, approaching it and retreating from it, as the lay mind seems to grasp or to lose hold of its significance. And, as we are in the way just now, having called up examples of Primaticcio and of Brumidi and his class, let us compare the methods of successful and less successful decorative effort. Why does Primaticcio accomplish the work intelligently, and Brumidi fail to do so? Is it not because the former adapts the material to his purpose, while Brumidi is not so sensitive to the limitations and requirements of the art he is employing? They each have chosen for their material the human figure; but one knows that it is to be used as an ornament, under certain conditions—the other has not so intelligently understood the conditions, and the human figure in his hands has not been subjected to the inevitable transformation that it must assume in order to become effective material to the decorator. Redundant life disporting itself in dome or panel of a certain order of architectural design is not acceptable to true decorative instinct. This, however, is too often the offense in decorative effort—Primaticcio is wise enough to know that perhaps no object in nature is so available to the purpose of ornamental invention as that same human figure rightly made use of. No forms in the whole domain of nature, that great storehouse from which all his material is drawn, are susceptible of more perfect adaptation to the needs of the artist in decorative design than those of the human figure. But, as in the case of all natural forms selected for this purpose, they must be so conventionalized that the mind receives them primarily as ornament. Thus treated, flowers, fruits, trees, animals, all products, indeed, of the natural world, and aspects of landscape even, may be impressed into the service of decorative art. To do this the artist must be so familiar with the natural and normal structure of visual things that he can mould these objects to his will by a process of elimination by which the things themselves, while preserving their character, do not retain too strongly their realistic aspect, which would be unsuited to the place they are to hold as ornament in conjunction with architecture. The painter must create a new world of conventionalized forms. He must sacrifice much that has appealed to him as possessing charm in his exhaustive studies from nature—he must exercise self-restraint, not indulge in too varied definition, must temper his color, and in fact, arbitrarily bend to his purpose the things he has chosen as a basis of his pattern or design. Now, in this case, it so happens that Primaticcio has elected to ornament by means of the human



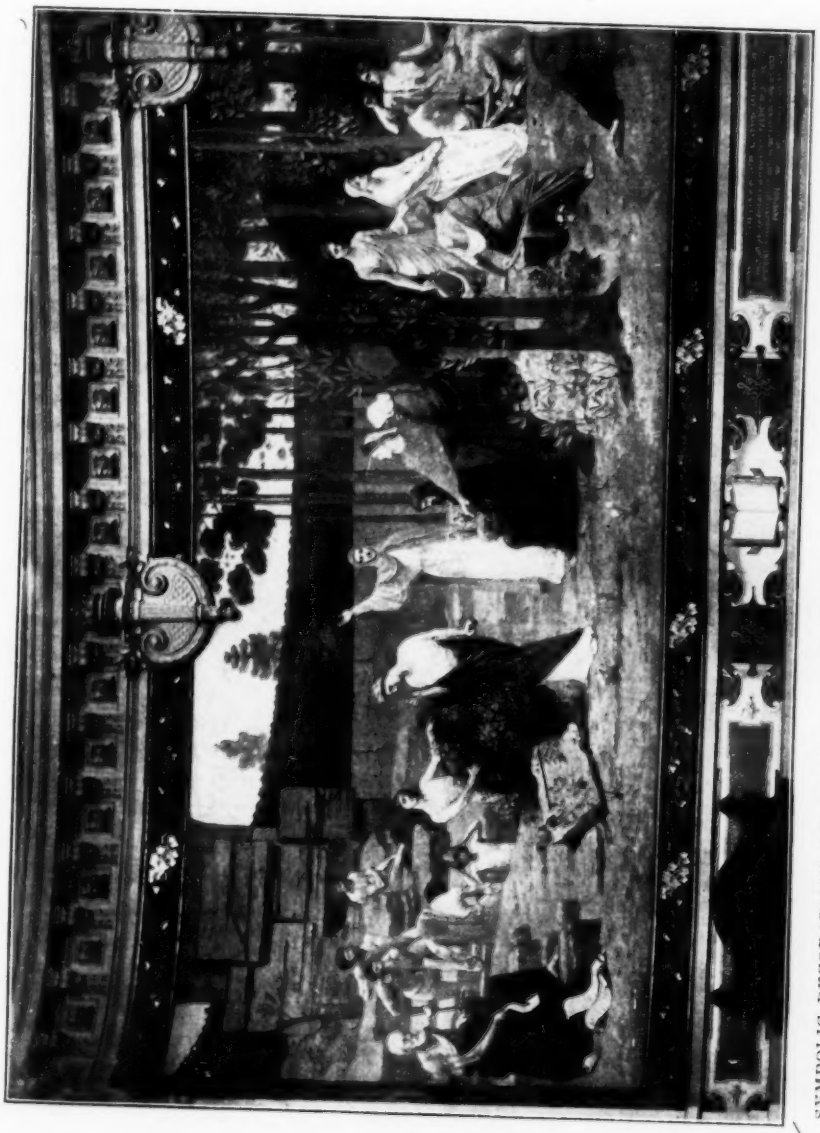
DIANA, BY PRIMATICCIO, GALLERY HENRY II., PALACE OF FONTAINEBLEAU.

figure great structural surfaces of a palace wall. Pendentives, lunettes, panels must receive painted decoration—the spaces filled by logical attitudes and postures possible to the physical structure of man. And what satisfactory spaces, what agreeableness of opposing quantities he has achieved! Slender throats and arms so turned as to oppose in beautiful contrast the more massive volume of trunk and head—all this is given with an ingenuity of line that is delightful. It is to this end, as do few other objects, the human figure lends itself—it is thus that thoughtful decoration truly decorates and mural painting becomes a field for exquisite artistic invention. The gentlemen of the Renaissance surely studied with a purpose in view, and I have quoted Primaticcio as an example, the fire of whose spirit it would perhaps be well for more decorators of to-day to emulate. And the mention, above, of the obligation of the mural painter to make use of all forms of the natural world, suggests that many modern decorators fail to give this matter due consideration and study.

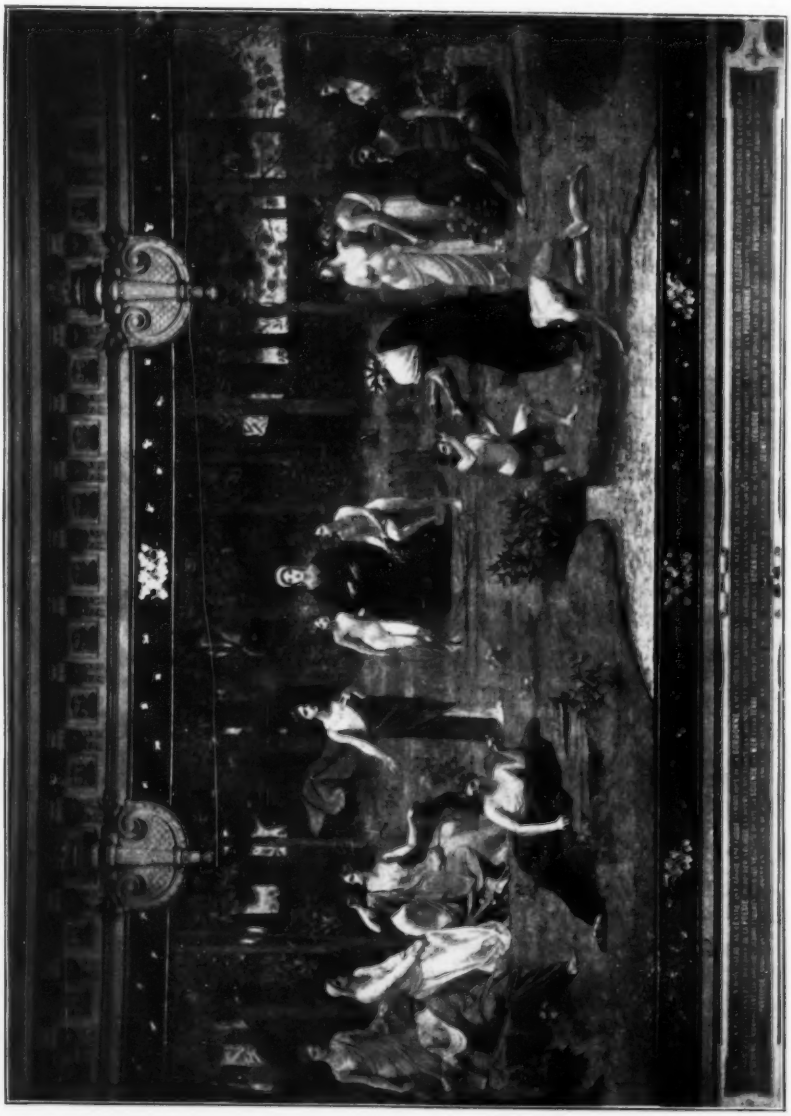
M. Galland, that able, serious and also brilliant decorator, owed to his excellence in this kind of design, his commission for one of the panels of the Panthéon. M. de Chennevières, Directeur de Beaux-Arts, after selecting a number of the most distinguished painters to cover the walls of this chuch with work illustrating a kind of apotheosis of St. Denis, Ste. Geneviève, of Clovis, Charlmagne, St. Louis and Jeanne d'Arc, came naturally to see that the different methods of these different men were, as decoration, going to clash. As a make-shift, he though that some tapestry-like border designed by the respective painters, but harmonious in motive and color, would help bind together, in some degree, the otherwise conflicting color schemes and compositions. Strange to say, in this apparently simple work, there was not a single artist who could satisfactorily fill his idea, and he resorted to M. Galland for a design. This, Galland readily made, and M. de Chennevières told him that he had done what not one of the figure painters was capable of doing. "You forget," replied Galland, "that I, too, paint the figure." It resulted in Galland's being commissioned to fill the panel near the door by "The Preaching of St. Denis." And this brings us to speak of M. Puvis de Chavannes that modern prince of decorators—in his sphere. Is it not possible that the inevitable excellence of Puvis's work in this branch of painting, the exalted position he holds, and the unquestioned security of his reputation come largely from his thorough understanding of himself, and of his making no mistakes? For it must be quite true that there were kinds of decorative work which he would not undertake—perhaps certain spaces, disastrously lighted, which he would not risk his name to fill. I can even conceive there is to

be forms of architecture with which he might care to have nothing to do. This high-minded, strenuous, and (in the way of form) puritanical nature, who seemed to fear the seductions that lay in the lovely lines of the human body, and who by a method of drawing could eliminate and reduce to its simplest and most telling statement the splendor of the human form—this princely decorator was master—in the field he had chosen. And it was a noble field, for he not only wrought in a most legitimate method, but he used this means as a language to voice a lofty plane of thought, to give expression to a world of unworldly and high ideas. The very austerity of his mind seemed to demand this broad and simple treatment; and he forged, in the (to the artist) hot furnace of neglect and ridicule the bright, pure and perfectly tempered instrument of his art. His detractors lived to recognize it. Chavannes' aristocratic and distinguished temperament was really classic in its tinge. Large forms and simple outlines appealed to him, so that, for him, landscape itself stood in a kind of stately and traditional dignity that was naturally transported to his canvasses as fitting material in which to place figures as dignified and stately as the world he created to surround them. By thus changing the obvious and commonplace aspect of natural things, this necromancer called up a celestial and terrestrial vision that did not estrange the humblest observer, but rather expanded him, augmented his powers and made him at home amid the scenes of the "Enfance de Sainte Geneviève," or, in the noonday rest, entitled "Le Sommeil" of the Musée de Lille. He is, indeed, great, in matter as well as in manner. Still, do not let us become warped in our admiration and narrow in our enthusiasm. In this many-sided world, while we acknowledge genius in one direction, we should not close our eyes to high gifts in another. Do not permit the cult, for it has become that, of Puvis de Chavannes to blind us to excellences of another kind. "There is nothing like Puvis." "The master of all," and like expressions are and have been constantly heard. He is master in his range—which he knew, and to which he devoted himself.

But this is not all of decoration. There are other gamuts of color, other orders of architecture with which decoration may have to do, and have much to do. I recall, sometimes, Venetian panels with rolling clouds and sunlit Venuses—Venice enthroned as some sumptuous queen, damask-draped, which no intricate design in its golden woof could prevent the impetuous hand of Veronese from tracing in all its strength and brilliance; no, not though the panel was to become a part of the heavy and encrusted ceiling in the palace of the Doges. On the contrary, it was because it was to be so set and so surrounded that he would not stay his hand;



SYMBOLIC DECORATIONS, BY PUVIS DE CHAVANNES, IN THE ROTUNDA OF THE SORBONNE IN PARIS.
PANEL TO THE LEFT.



SYMBOLIC DECORATIONS, BY PUVIS DE CHAVANNES, IN THE ROTUNDA OF THE SORBONNE IN PARIS.
CENTER PANEL.

SYMBOLIC DECORATIONS, BY PUVIS DE CHAVANNES, IN THE ROTUNDA OF THE SORBONNE IN PARIS.
PANEL TO THE RIGHT.

and it remains to-day an example of successful decoration—of another kind from that of Primaticcio, from that of Puvis—but decoration, all the same. Talk to us not of "holes in the wall" which too strong treatment will produce—it can effect this only, when "out of place"—but so arbitrary and so narrow is this idea of obedience to the structural integrity of a side wall or ceiling that the public has become sceptical through half-knowledge. This bogey of "holes in the wall" seems a phantom that artists have called up with which to frighten themselves. It is not too strong treatment which makes the trouble—it is not so much need or lack of able painting, but rather need or lack of good judgment, right feeling, sensitiveness to the requirements of the case that causes disaster here. Reduced to a simple statement, it is perhaps a misapprehension of the nature of mural art; but the same failure attends many painters in other branches of their work. Pictures often jump out at you from their frames, and the artists are called realists, when there is no such thing as realism possible or desirable in the whole realm of painting. In mural work, one might say there is even less chance of the mind being offensively deceived or diverted through illegitimate employment of the painter's resources, and for this reason all painting is a compromise; the greatest pages of the painter's art stand for a concession to certain restrictions which control the use of pigments—the very nature of the material employed imposes these. Now, when this art is based upon the walls of a structure, the observer inspecting this work is conscious of the surrounding structural features—he knows the roof is solid, the walls firm, the columns strong; this is the result of experience and habit of thought. There is little to fear then if the panels that represent supporting walls, the pendentives and lunettes, that mean often the constructive integrity of the roof, be intelligently treated in strong or palish color, in more or less redundent modeling, that the mind will be unpleasantly disturbed by a sense of insufficient resistance. At the same time it is here that the decorator may distinguish himself, and as the Venetian with full and rich palette did not jeopardize the sense of strength in the ornate palaces of the Queen of the Adriatic, so Puvis and Primaticcio have never invalidated the structural features of the architecture of the Renaissance and other epochs when adorning buildings of those respective periods. What indeed is the whole profession of painting but a demand upon the artist that he yield to certain arbitrary exactions that his calling lays upon him? Does he place a landscape in a frame, a portrait or a marine view; let him see to it then that they stay there—they do not always do so. If then the decorator paint ceilings or walls, see to it that they remain such, although they blaze with color as the noonday, or pale in the twilight mono-

chrome of dusk. This may be done, has been done, will be done and no structure marred.

So different, however, is the practice of mural painting from all other, that with each differing feature or order of architecture the artist must modify his point of view, his sense of color and of form. There is a wide difference in sentiment in these two styles of decoration, between the Venetians and de Chavannes, but in this kaleidoscopic city of New York, we range from the Acropolis to the Trocadéro with perhaps too little compunction of spirit. The mural painter must be prepared for this; he must have all that treasure of synthetic form derived from his study of the natural world, and he must adapt this as successfully to the requirements of a particular problem as these painters have done before him. In addition to the maintenance of a correct and unobtrusive surface aspect, the other questions of the subject, composition, and a sense of line which will contribute to the impressiveness and distinction of the chamber decorated, must all come up and be met intelligently. And this leads me to mention that in this matter, even of surface fitness, that great monument in Paris, most propitiously begun in the interior decoration of M. de Chavannes, is a failure as a work of art, which is what a great building as a whole should stand for. The Panthéon which received an additional benediction, when, in 1876, the decorations of Puvis were uncovered, might have become this unique and distinguished object—a work of art—had this same painter been permitted to control all the pictured surfaces of this temple of religion and of fame. I can conceive of few, if of any more perfect structures in existence, from the point of view of art, had Puvis here been given his chance. As perfect as the Sistine Chapel, and far more soul-touching and human. Why could he not have had it? Why, when the right man arises is he not taken possession of, surrounded, if need were by ramparts of fire, until his right work is done? Think of the serene, pure, thoughtful, ecstatic "Enfance de Sainte Geneviève," its perfect harmony with the character of the building, and then imagine the whole interior of this sacred pile tempered to this saintly scheme of color and elevation of thought. As it stands to-day the Panthéon, as a whole, is no better than many other structures decorated by various minds and hands. Rich heavy painting which calls for a different setting, side by side with the ethereal conceptions of Chevannes—a lost opportunity. Will the world ever heed, or art ever come into its own! When I speak of rich heavy painting I mean the insistent, virile work of Bonnat and Jean-Paul Laurens, and the academic transcriptions of legendary and sacred story by others as well, any of whom would have been more appropriately engaged in the sumptuous palaces of the Adriatic or in Halls of Justice, than in

THE CHILDHOOD OF ST. GENEVIÈVE, BY PUVIS DE CHAVANNES, IN THE PANTHÉON, PARIS.

this severe cloister-like interior of the Panthéon where Puvis has set so noble and restrained a pace. The careful selection, then, of the men best fitted for a particular architectural environment would be a long step towards successful issue from problems of this character. The effect of, say, M. Bonnat's method in the chamber with that of Chavannes cannot fail to be dissonant. This is not depreciating either Bonnat or Puvis; Bonnat builds up his figure and his interiors with the plastic touch of the sculptor; they seem at times all but in relief. It is bone, sinew and epidermis—textile fabric, masonry and woodwork, if his illustration demands them, that he gives with no hesitating hand, and without regard to the setting, order of architecture or few if any of the conditions exacted by the place he is supposed to embellish. With Puvis, on the contrary, we are in the presence of a world he has created, which belongs essentially to those who people it, so simple, so positive, so natural does it all appear—and presented with so perfect a tact and judgment that we do not regard the setting inconsistent with the scene. This I think we decidedly do with most of the other works in this Panthéon of Great Men. I have taken this building, which in its mural painting was so well begun, as an example of an opportunity lost, and have sought to emphasize the desirability of being alive to the opportunity and of seizing it against all apparent hindrances, in order to give to the world that unique and worthy object, a great work of art. Perhaps at no moment in the history of our country has it been so clearly our duty to draw apart, to sit down for a time, and consider this question, than the present one. We are raising cathedrals, building palaces and churches; and every new structure in this rapidly developing country should be hailed as a new possibility, a fresh opportunity. We have now a class of workers who devote their whole though to the study of interior decoration. Our mural painters are, as never before, in friendly consultation with our architects. These two classes of artists begin to feel their inter-dependence and this is a most promising side of the question. Together they study the special treatment certain surfaces should receive—they take into consideration the depth or shallowness of a recess; the pitch of a ceiling; the height, breadth and length of a chamber, with a view to emphasizing its purposes and accentuating its best features. It is here that painting truly becomes the handmaiden of architecture, and that the two arts combine to create one perfect work. Now, had this always been the practice, what mistakes might have been avoided in buildings, that, as an afterthought, have received painted decoration! Is it not perhaps true that some effect of Abbey's fine work in the Boston Public Library may be lost through the inadequate lighting it receives? These compositions are full of archæological interest; they are not

only artistic in plan, they are scholarly in research of detail which, in a depository of the literatures of the world is of peculiar significance and value, as aids to the research of students. Much of this seemed thrown away in the obscurity of the upper part of the room when I chanced to see these pictures in place. If it was the original intention of the architect to thus ornament these walls this is an opportunity to a certain degree lost. As far as we have gone in mural decoration, it is fair, I think, to say that, until very recently, the painter has been obliged to adapt himself to the conditions he has inherited, so to speak, from the architect who has gone before. In the new order of things we could wish the work produced should be one work—that of both architect and painter. But in many existing cases the architect has, by the use of ornamental relief work in plaster of some conventional design, left no space for the painter—this, either through thoughtlessness, or for reasons best known to himself. We have heard regrets expressed by painters that this is so, and can call to mind instances where the lavish use of marbles or the above-mentioned Renaissance arabesque relief has precluded the introduction of pictured surfaces. One of the concert-rooms in the Madison Square Garden is an example in point, or was so a few years ago. Again, the long reception room of the Fifth Avenue Hotel was decorated by a mural painter, and here the ceiling is so low, and the light so poor that the work cannot be seen to advantage. This, of course, was an afterthought, and architects now designing, with mural painting in mind, would considerately arrange for the proper height and lighting by which to display such ornamentation. The architect does at present often wish to provide propitious spaces for, shall we say the accompanying painter? This is as it should be—it was formerly the coming painter, and he came long after the architect had wrought. As we have hinted, the remedy is in collaboration from the beginning of the building. Architect and painter must get together—the painter to direct the best means of securing advantageous illumination for his pictured panels or ceiling, and the architect to decide if this may be done in obedience to the structural integrity and beauty of the chamber to be embellished. In this way beauty may be achieved without any sacrifice of utility or architectural rectitude.

And another point it might be well for the architect to bear in mind: Further success may be obtained by his handing over to the painter the whole chamber he is to decorate and let him, the artist, plan the color scheme from floor to ceiling, rather than to parcel out certain spaces in the same room to several and various men. With the princely fortunes here and the alert American minds that have achieved them, there is a field for the encourage-

ment of mural painting, as wide as the country itself. Westward, not only the course of Empire, but the course of Art is evidently taking its way. There is opening to all branches of the fine arts, a future for greater triumphs than perhaps any of the past. Certainly the past is rich in precedents, they are the possession of the present; but to this must be added a world of new vision. The various movements in art during the past twenty-five years have contributed treasures of beauty revealed by a finer faculty of seeing. This newly acquired manner of using the eyesight has alone so developed the method of manipulating and using color that the palette of the painter of to-day is extended and clarified—its range is wider, and in the greater liberty, thus acquired, the artist can surprise the very secrets of the circumambient air. The all-enveloping ether palpitates, vibrates to his touch, and emotions of a finer and subtler kind are evoked and flung upon ceiling and side wall with an airier but with more thrilling result than the dreams, even, which Raphael traced on the walls of the Farnesina. It is characteristic of our race to seek the best that is being done, if we only give ourselves the time to ascertain what the best is, so that with the generous expenditure which those who love fine things will be more and more earnestly sought. Our architects are interesting themselves, as we have said in this matter of allying their work with those other arts which properly belong to it—painting and sculpture. They are, much more than formerly, co-workers; and when this practice becomes more general we may reasonably look for great results. For it is by consulting in advance, co-operating, in a word, that the question of light, quantity of mass in composition, and perfect key of color may be most effectively secured. Painters, architects and sculptors will eventually, let us repeat, act together and in accord with a view to creating one work.

There is, however, a pre-requisite to this desirable end, and that is a sympathetic and an appreciative public. The more the layman will interest himself in these questions the brighter will be the prospect for a happy issue in mural painting. Let him, in the same way that he seeks to understand the purpose of the portrait painter, of the painter of landscape, or the intention of any worker in the arts, endeavor to train himself to become a critic of this phase of painting, so that when he stands in the presence of pictured walls and spaces in some great building, he may be sensitive to the success or non-success of the work done there. The laymen should be able to feel that a controlling intelligence has been active, giving to the artist's painting and to his composition an architectural fitness that belongs essentially to the place. And in any case decorative painting has this advantage over painting that is portable, that it is always seen in the position it was designed for. It has been

done to be viewed in that special light and at that actual distance, and with the intention of producing the effect it possesses for the beholder. If then these conditions have been adequately met the right impression will be received. As much can not be said for easel pictures which suffer often great detriment through careless or incompetent placing. As for themes with which to picture the walls of our great buildings and fine houses, many are to be found among the multifarious activities which go to make up the wealth and greatness of the country, that are as fine as any rising from older traditions, and as picturesque as those that legend offers. The very mechanical expedients that our civilization has evoked, the appliances of transportation, inventions of electricity, facilities to agriculture and to the industries provide subjects most fitting to be traced on walls of banks and trust companies suggesting the sources from which these institutions draw their "sinews of war." The great surfaces to be found in railway stations, hospitals, colleges and halls of State hint, almost before a touch of painting has been done, the appropriate thought that should speak from the walls. The material for æsthetic charm and picturesque portrayal is not alone the property of the ancients, although many moderns seem to cling to it as does the Christian to his hope of salvation—salvation is here at our doors, and as in other provinces of thought it may be found in the effective use made of present opportunities and present conditions. Then, in time, work so done will become hallowed by tradition and tell the story that the beauty which exists to-day has become a classic of the past.

If modern decoration could be conceived in some such spirit, respecting in its practice the canons that control it, there might burst upon this western world a vision that would rival the splendor of the Farnesina or the Vatican.

Frank Fowler.

THE OLD STOCK EXCHANGE.
Built in 1865.

THE NEW YORK STOCK EXCHANGE.

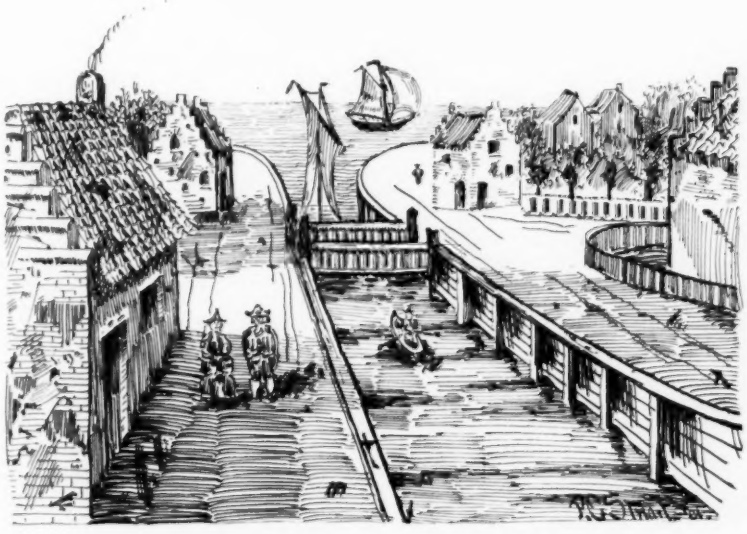
IF all the figurative definitions given of architecture, none is more apt for expressing the general effect of a noble work than this: poetry in stone. Emerson defines poetry as "The perpetual endeavor to express the spirit of the thing, to pass the brute body and search the life and reason which cause it to exist." Applying this definition to "architectural poetry" it is evident that a true test of the highest and most essentially æsthetic merits of a building is thereby afforded. As an illustration of a thought, then, as a symbol of an idea, as an exposition of the characteristics of an age and people, architecture enters a province above and beyond that which merely concerns the value of things utilitarian.

Unlike those of historic times and places, the buildings of to-day that best tell the stories of our people are, with exceptions here and there, commercial buildings. The vast monuments of the ancient Egyptians are good indices to Egyptian life, which was ever ponderously determined upon death, the chief end being to be buried well, and to give imperishability to the corpse. The Greeks' philosophy of life was of another sort: death was merely the gateway to immortal glory; he loved life and adored beauty, and his perfect senses were portrayed in the temples and tombs, which, in the words of Shelley, "Seem not so much tombs, as voluptuous chambers for immortal spirits." The advent and growth of Christianity brought new aspirations and new wisdom to the minds of men. No more eloquent records of the feelings, aspirations and enthusiasms of all classes in mediaeval times—princes, priests, masons and mathematicians alike—were possible than those to which the great Gothic cathedrals of Europe bear silent witness.

In our own land to-day, this contemplation of architecture as a sign board to point out the dominant characteristics of a nation holds no less true. The great prosperity of the country, the absorbing business of making money, the large scale of commercial and financial operations are evidenced more plainly than words can tell by our business buildings. It is fitting that the New York Stock Exchange, which has often been termed the "Business pulse of the nation" should at this time of unexampled prosperity begin the erection of a great and magnificent building, which shall be at once its home, and the focus of the country's business interests. It will be the first great commercial edifice to be built in New York in the twentieth century, a fitting precursor of an age destined for

great buildings. It will represent the highest engineering achievements of modern construction; and it will contain architectural features of a unique and impressive character. In fine, it will be a monument typical of this era of great commercial buildings, and illustrative of the ruling tendencies of the American people.

The intricacies of architectural design are seldom appreciated by the layman. They are usually not apparent in the completed work, and for this reason description and criticism of the same often lose in value. Mere description of a great building fails to describe and criticism is largely superficial. In architecture, as in law, and



BROAD STREET CANAL IN 1650.

as in most fields of human interest and endeavor, until all the facts relating to a case have been known and duly weighed, a just judgment cannot be passed.

A problem such as the designing of the New York Stock Exchange was a labyrinth of many exacting and limiting conditions each of individual importance, like the arteries of the human body, but all interdependent, and closely related to the architectural motives of the design. In this problem there was no single dominant feature permanently fixed at the start and to which all other features were made subservient. Everything depended upon everything else and nothing remained unchanged to the end. Hence the working out of the design consisted from beginning to end in a series of adjustments. It shall be our purpose to trace herewith the history of these adjustments, supplementing the account by such data re-

lating to the ways and means of operating business upon the Stock Exchange as may bear directly upon our main subject.

An historic association of a most appropriate sort is attached to the site which the Exchange has occupied since 1865. It is necessary to turn back the pages of history to long before that memorable meeting of brokers in 1792 held under the spreading branches of a butternut tree, which, at the time, stood in front of No. 70 Wall street, when the first steps were taken towards organizing what was destined to become the greatest mart in the world; back another century before the building known as the Meal Market was erected in lower Wall street in 1709; back still further before that fateful day in 1664 when a fleet of English war ships sailed up the bay, and stout old Peter Stuyvesant stood with his wooden leg braced against an angle of the palisaded stone and mud fort, prepared to die rather than surrender his town; back finally to the first chapter of the history of the old Dutch town, when Broadway was an Indian trail running along the ridge of a hill, when Wall street was a palisade or "waal," built to prevent invasion, and when Broad street was a creek which the burghers converted into a canal after the pattern of their beloved Amsterdam. Here stood many of the best houses in the village, built a sufficient distance back from the canal to permit a generous width of promenade. Here the simple life of the settlers, when not harassed by the Indians, peacefully ebbed and flowed. Here, in the long summer twilights, sat the burgher with his long pipe, and the wife with her knitting, and watched the children at their play, and chatted with the passing friend. And here the friendly Indians came in their canoes and bartered with the settlers, exchanging their beaver and other skins for beads and such things as were dear to the Indian heart.

Prior to its possession of an entire building in 1865, the New York Stock Exchange had quarters in various buildings. Starting at the famous old Tontine Coffee House, soon after the butternut tree meeting, the brokers in 1827 moved to the First Merchants' Exchange Building, Wall and Hanover streets. Nine years later they moved to the Jauncey Building, then at No. 43 Wall street. These quarters sufficed but six years, the next on the list being The Second Merchants' Exchange, which building is now the United States Custom House, Wall and William streets. Following this comes the old Corn Exchange Bank Building, 1852, corner of William and Beaver streets, and two years later, Lord's Court, which had entrances on William and Beaver streets and Exchange place. Then, in 1865, a site at 10 and 12 Broad street was purchased and a building erected by the Stock Exchange Building Co., a corporation composed exclusively of Exchange

members. It was not long before extensive alterations to the new building were necessary. In 1869 occurred the amalgamation of the Stock Exchange with the Open Board of Stock Brokers, which consolidation, together with the admission of the government bond brokers, increased the membership of the Exchange from 583 to 1060. Hence the entire reconstruction of the building during the following year. Since then further alterations and additions have been made from time to time, the last change of note having been made in 1897, when the New street end of the ground floor of the Commercial Cable Building, which adjoins the Stock Exchange, was rented for the purpose of providing a smoking and reception room for the members and their friends. But all these efforts failed to more than temporarily stay the constantly increasing demands for space. These demands became so urgent that a committee was finally appointed and empowered to devise ways and means for providing the much needed facilities. This committee unanimously recommended a new building and forthwith proceeded to draw up a program of specifications for that end. The result was a competition, in which several of the best known architects of the city were asked to enter, and which was won by Mr. George B. Post. The program of competition, which the Building Committee, with the assistance of Professor Ware, of Columbia University, and Mr. Charles W. Clinton, of Clinton & Russell, had prepared, called for two distinct schemes: one of which was to provide an entire story which should be rented for banking purposes, and the other was to omit the banking story in case it should be found to be undesirable. The latter scheme was the one adopted, for reasons which will be explained hereafter. The elevation which Mr. Post had designed for the first scheme, however,

THE OLD TONTINE COFFEE HOUSE, CORNER OF WALL AND WATER STREETS.

had such strong qualities in its favor that the committee desired to preserve its features as far as possible by adapting that elevation to the scheme decided upon. In addition to this difficulty, the problem was further complicated by several matters which were constant sources of annoyance almost to the very end: first, the extraordinary irregularity of the contour of the lot; second, the wide disparity in the three street levels, and the consequent excessive inclines and complicated floor levels in the lower stories; third, the peculiar conditions found in the subsoil; fourth, the disposal of the great safe deposit vault.

Foundations.

It is an interesting fact that the solution of the important problem of foundations for the New York Stock Exchange was determined by the same topographical conditions which two hundred and fifty years ago made Broad street the first trading locality on Manhattan Island. The old ditch of by-gone days, which had long since disappeared from view, was found, when extensive borings were made for the new building, to be an important factor in the situation. The survey made by the engineer at bed rock of the entire plot of ground to be occupied by the Exchange, disclosed a variation of water levels of between four and five feet, the lowest levels being on the southern end of the Broad street side. The explanation made by the engineer of this anomalous condition is that the water which, under the southeastern portion of the property is still drained by the old ditch, on the western and northern position is held back by some sort of a dam, possibly the remains of an old beaver dam. Another theory conceives the presence of blue clay in the subsoil. Since the security of a pile foundation depends upon the total submersion of the piles, this solution of the problem under discussion was abandoned. Although it is only a few years since the pneumatic caisson was introduced in the construction of New York buildings, it has already practically superseded all other systems of foundations for the large downtown business buildings.

When Mr. Post decided to place his building upon a caisson foundation, the problem resolved itself into a question of excavations: how much of the sixty odd feet of sand, gravel and water, between the surface level and bed rock should be excavated? Every consideration, except possibly that of cost, emphatically demanded that the entire lot be excavated to bed rock excepting portions under the Wall and New streets entrance lobbies.

The most thorough investigation, however, was made of several other schemes before they were finally abandoned in favor of the deep excavation. The highest water level was found to be a few

feet below the contemplated position of the Board Room floor. Had the lot been excavated only to this point, therefore, the depth would have allowed but two low stories for accommodating the various underground requirements, such as boiler and engine room and space for ventilating machinery, storage batteries, etc., leaving none for hat and coat rooms, locker rooms, toilet rooms, barber shops and baths. It was possible to place these features in the upper stories but only under cramped and unsatisfactory conditions. It might seem that the 33 feet of extra depth obtained by excavating to bed rock was an unwarranted increase, and that greater economy would have been gained by excavating only to such a distance below water level as would assure sufficient space for the basement and sub-basement stories. This latter resource, however, was found to be impracticable, and for a rather unusual cause. Mr. Post discovered by computation that, owing to the fact that there were no interior supports in the immense Board Room, the upward pressure of the water in the subsoil would be three times greater than the superimposed weight, which would have resulted in the upheaval of the Board Room floor, together with the stories underneath.

Safe Deposit Vault.

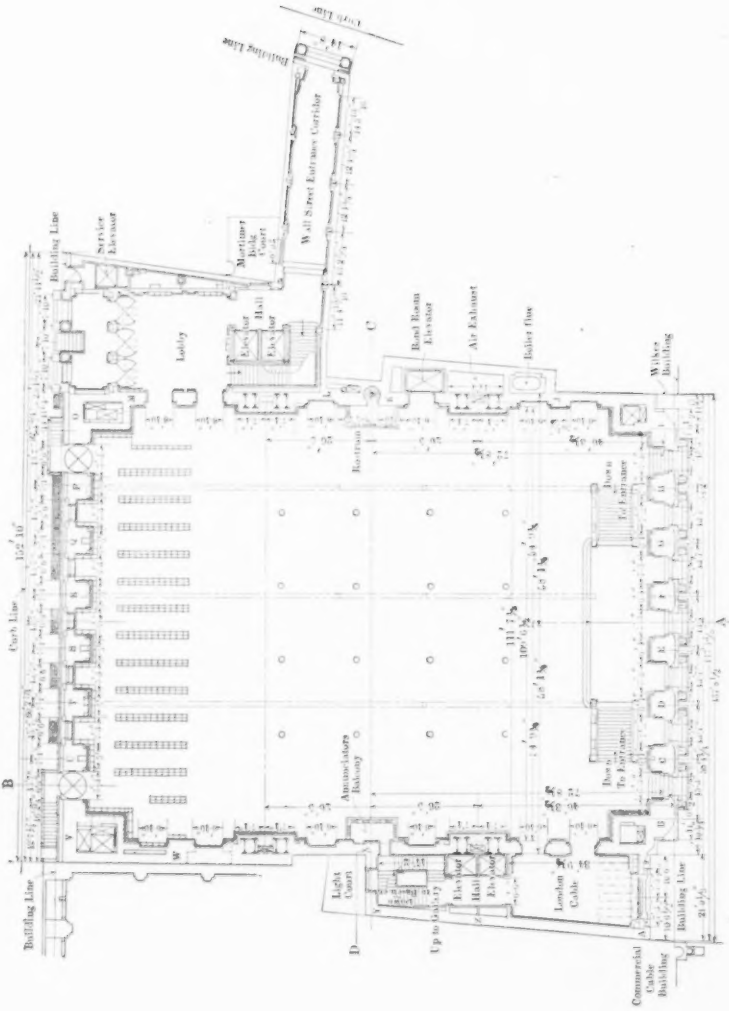
Several feet under the Board Room floor of the old Stock Exchange Building lies a large stone vault. In designing the new building this old vault proved to be a stumbling block. As can be seen by the accompanying plan, its lines are askew with those of the building, besides which its position bears an awkward relation to the desired floor heights. It was, in fact, a veritable *bête noir* in the planning and construction of the underground stories. Anything that affected the inviolateness of this vault, however, was not countenanced until after many months spent in developing the plans. But there came a day when the evidence against the retention of the old vault had accumulated to a convincing degree, and it was therefore finally decided that a new vault of larger size and more modern construction should be built. As will be seen by the plan, the new vault is designed to occupy a space just south of the old one and at right angles to Broad street. During the construction of the new building the old vault will not be disturbed until the new one is completed. The position of the new vault was only determined upon after many conferences between the Building Committee and Mr. Post, and after dozens of sketches and scale drawings had been made.

Board Room Floor Plan.

The critical point in the designing of the new Exchange did not concern the questions of foundations and vault, the solution of which were more or less arbitrary. In the development of the Board Room certain essential requirements were fixed at the start, and it was the degree to which these requirements were satisfied that the success of the building hinged upon, and which won the competition for Mr. Post. Briefly stated, the improvements demanded by the brokers with one accord were: more space, more facility and convenience for the transaction of business, more light upon the Board Room floor and better ventilation. Unless these improvements were affected to a very marked degree in the new building, it was a foregone conclusion that the latter would prove a mammoth failure regardless of its other qualities.

Increased Area.

The new Board Room floor is designed to contain 15,000 square feet, approximately an increase of about 60% over the area of the old room. This was gained by various means. In the first place, the new lot, owing to the accession of the Western Union Building is 35% larger than the old. Besides the increase of the superficial area of the Board Room, considerable further space was gained by judicious planning of the floor itself. In the old building a large entrance vestibule at the Broad street end robbed the Board Room of 2,000 square feet, besides a great deal of valuable light. In the new building this entrance is of even more generous size, and owing to its depression beneath the Board Room floor, robs the latter of only 350 square feet. Throughout the entire development of this part of the problem, the paramount idea was to increase the floor space wherever possible and without jeopardizing the facilities for transacting business. Any scheme which would result in a reduction of the area was likely to be instantly condemned by the Building Committee. An important gain in floor space was made by a new arrangement of telephones, which will be discussed later. Then, too, much of the space around the walls of the old Board Room which was taken up by the rostrum, spaces for the public, booths for telegraph operators, London Cable Co., outside messengers, etc., is gained in the new design, for all of those features are removed from the Board Room floor proper. The rostrum in the new building will be placed on a balcony on the north side of the room, and will be reached by a small stairway. The annunciators with their keyboards will also be placed upon balconies situated symmetrically opposite each other. They will be very accessible from the floor and in direct communication with the various entrances by means of telephones or tubes.



BOARD ROOM FLOOR PLAN.

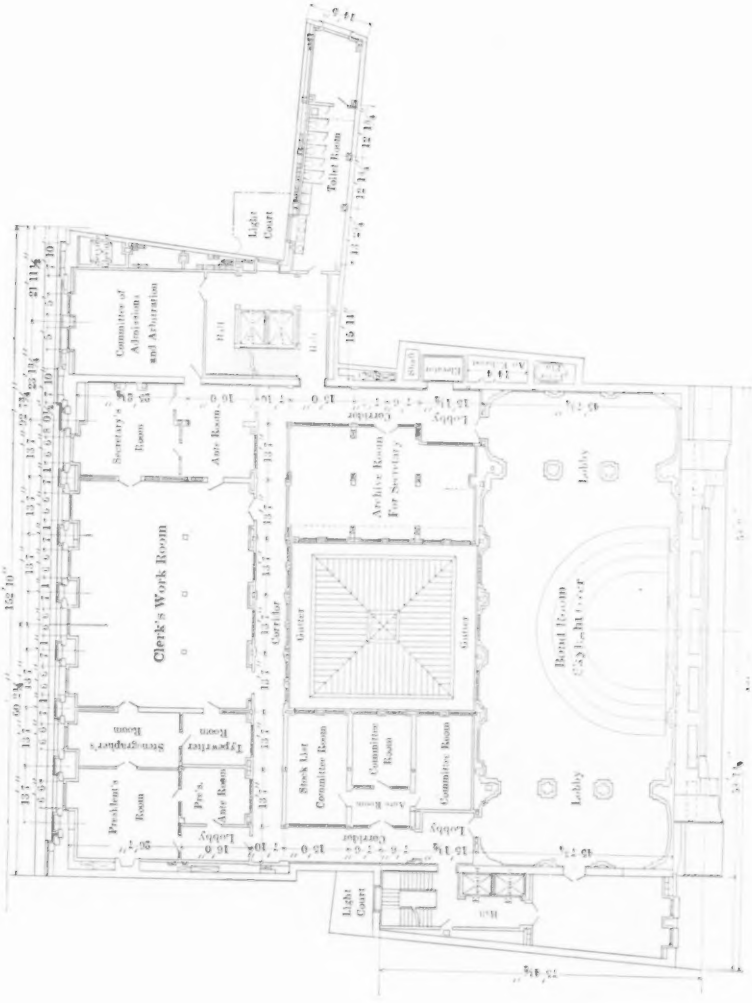
The public spaces will be confined to the side alcoves and likewise the London Cable Company. The outside messengers are provided for by a room in the basement reached by pneumatic tube service from the Board Room and connected with the three streets by corridors in the basement. By means of these various changes, a gain of about 60% in unobstructed floor space was made over the old Board Room, which gain does not include several hundred square feet in the alcoves which are used in direct connection with the floor.

Improved Facilities. Telephone System.

It is probable that many people do not realize how important a factor in the business of the stock broker the telephone has become. Fifteen or twenty years ago, when all orders were transmitted from the broker's office to the Exchange floor by messenger, a boy who would make the round trip to and from a nearby office inside of fifteen minutes was considered to be in line for promotion. The same operation is now performed by telephone in sixty sconds and without the boy. The desirability of offices in the immediate neighborhood of the Exchange in the old days, was, of course, very great, and the rents of the same correspondingly so. It is difficult to tell how the vast amount of business that is now transacted on the Exchange, amounting several times lately to over 3,000,000 shares in one day, could possibly have been undertaken before the invention of the telephone. An army of boys would have been required by every large brokerage house, and then the orders would necessarily have been sent in batches instead of individually, as is now possible. There are to-day 500 telephones on the floor of the Exchange, and all of them are in almost constant use from 10 o'clock in the morning to 3 o'clock in the afternoon. In the old Exchange they were originally divided into two sets at the New street end of the floor. From time to time, as additional ones were required, they were placed in every conceivable nook and corner, sometimes at an inconvenient distance from the centre of operations, and not infrequently in dark places. Various and manifold were the schemes designed for solving the telephone problem for the new building. In the competition drawings, the telephones were placed in each end of the room, the entrances then being in the side. When a central Broad street entrance was decided upon, the telephones were all arranged at that end, on either side of the entrance. This seemed satisfactory from the architect's point of view, but it would not pass under the critical eyes of the Building Committee and their associates of the Exchange. The objections made were that the telephone clerks were obliged to use the same entrances as the members of the Exchange, and to pass over a por-

tion of the Board Room proper in getting to the telephones. This scheme abandoned, others were designed for placing the telephones in the alcoves at the sides of the room. These were promptly discarded by the committee as being unfeasible. Then several sketches were made showing circular and elliptical arrangements around the walls of the room. Owing to the necessarily rectangular form of the room, these arrangements proved extravagant in utilizing the floor space, as well as wall space for bulletins—a consideration hardly less important. It was suggested by a member of the Exchange to place the telephones around the bulletin poles in the centre of the room, and sketches for this scheme were accordingly made. They showed conclusively that not only would an excessive amount of floor space be taken up thereby, but also that the arrangement would result in vast confusion to the brokers, who would be in danger of bumping into each other at every turn. After several weeks spent in this sort of floundering, Mr. R. H. Thomas, the chairman of the Building Committee, suggested the key to the solution of the telephone problem. This gentleman, whose earnest co-operation with Mr. A. E. Willauer (the draughtsman in charge of the job at that time in Mr. Post's office) proved such a potent factor in its successful development throughout, suggested that the Broad street end of the building should be made the monumental end, and the New street the working end, so to speak. With this idea in mind, the telephones were once more drawn out, the resulting plan showing a scheme so simple, straightforward and satisfactory in every way as to give the uninitiated but an adequate idea of the labor spent before it was perfected. The telephones, as now arranged and shown in the illustration, are in one group at the New street end of the building. The scheme necessitating but one aisle instead of two, as formerly, gains a clear five feet in the length of the Board Room floor. A separate entrance is provided for clerks, who will not transgress upon the Exchange floor proper. When it is considered that business on the Exchange is conducted almost instantaneously, that the loss of a second's time may be a serious thing, the great importance of uniformity in telephone facilities will be appreciated. It is interesting to note that despite the large amount of space which the great piers take up on the floor, they are turned to such good purpose by the system of encircling telephones, that an actual saving in space is effected; for more telephones have been designed in these positions than would have been possible had the piers been replaced by a simple running wall only thick enough to support the end of the building.

The pneumatic tube service to be installed to and from the new Board Room will be very complete. A direct system will be used,



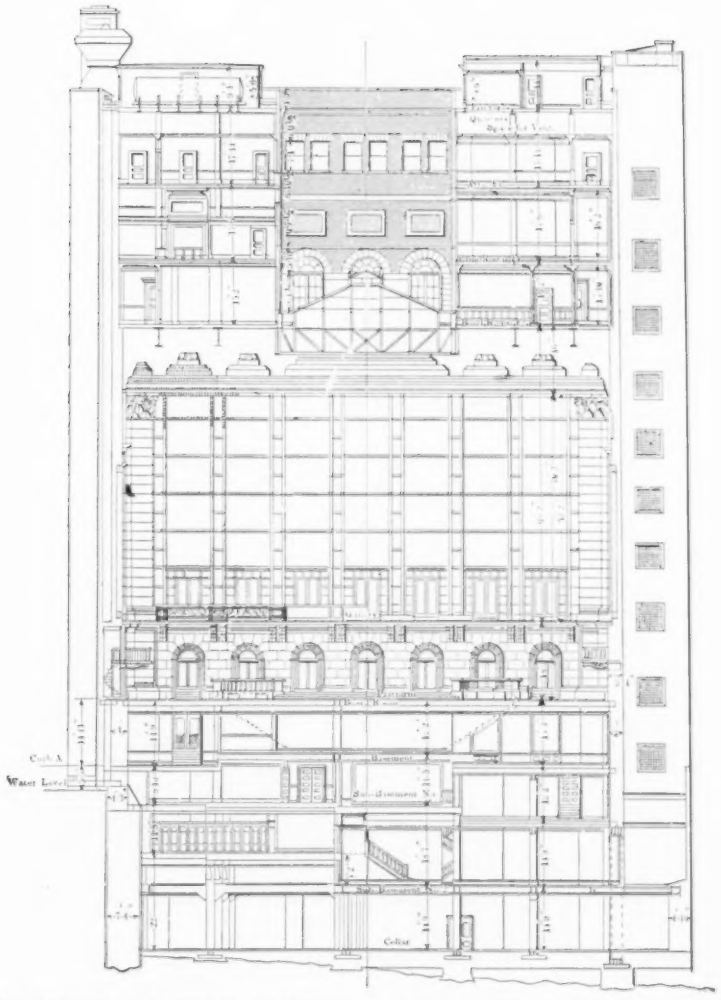
BOND ROOM FLOOR PLAN.

consisting of about 30 separate lines and their returns. These will extend to the various telegraph and cable quarters and also to the Luncheon Club Room, Bond Room, smoking gallery, etc., so that the members may send and receive telegrams and messages from every part of the building without depending upon messenger boys.

Increased Light.

As has already been mentioned, one of the most radical defects in the old Stock Exchange was inadequate lighting of the Board Room; hence this improvement was strongly insisted upon for the new building. It might almost be said that this idea was paramount in Mr. Post's first conception of his design, determining, as it did, the most impressive and monumental features of the building. In brief, the problem was how to get the greatest possible amount of light in a room 138 feet long by 112 feet wide and 80 feet high and extending from street to street, said room to have two stories above it, the exterior facades of the building to be treated in a monumental way appropriate to the scale and magnificence of the plan. It was evident at the outset that heavy supports were necessary extending across the two facades to bear the superimposed weight of the upper stories. It will be at once apparent to the layman that a round pier standing free will obstruct less light than a square pier of the same diameter. Hence the interior colonnades of the facades. Next arose the question how to screen the interior from the elements. The solution cannot but be regarded by anyone familiar with architectural precedent as bold in the extreme. Instead of building a wall back of his columns and puncturing that wall by many separate windows, Mr. Post resolved to construct one immense glass screen from base to entablature and extending the entire width of the facade, thus making practically one window of the whole front of the Board Room on each street. The effect of this in the completed building can be better imagined than described. We know of no similar example of monumental architecture from which to draw comparisons. The nearest approach to it might, perhaps, be found in some of the old classic temples, whose giant exterior columns appeared from the inside darkly silhouetted against the floor of brilliant light from without. It is intended to make this plate glass screen as transparent as possible with a minimum of iron work essential to its support, so that the stone columns 66 inches in diameter and 52 feet high may form an important part of the architectural effect of the interior. The aesthetic effect can only be judged when the building is completed. It is certain to be interesting and striking.

For cleaning these immense windows a kind of painter's scaffolding will be provided. Shades will be fastened to the vertical iron



TRANSVERSE SECTION SHOWING GLASS SCREEN IN BOARD ROOM.

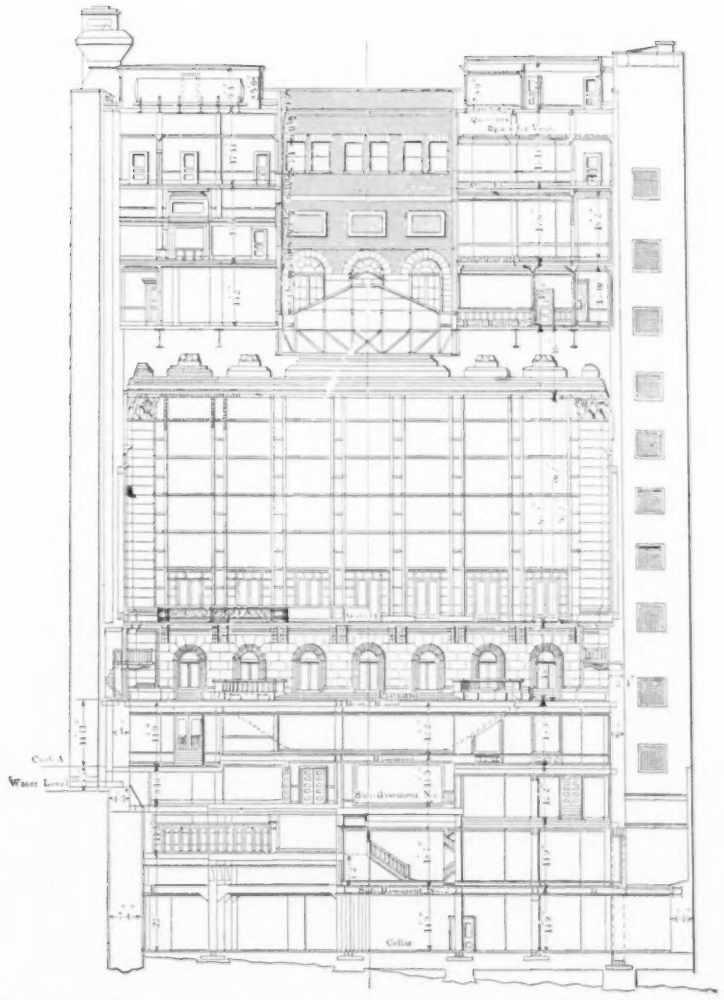
mullions and will be thus designed to roll right and left instead of up and down. They will be operated by electric buttons on the Board Room floor. Such large surfaces of glass will necessarily radiate much cold air into the room in freezing weather. Steam radiators will, therefore, be installed at the bases of the windows for the express purpose of heating their interior surfaces. The glass for a certain distance up will be made double, the space between serving as a cold air slit through which the air will circulate down and over the steam coils placed at the gallery floor. The heated air then arising will be dispersed over the interior surface of the window. The total wind pressure, at 35 lbs. per square foot against the outside surface of each window, will amount to 75 tons.

To resist this force of nature, and also to support the 13 tons weight of each window, 18-inch iron mullions were designed. These iron columns will be placed in pairs directly back of the stone columns and hung from overhead girders. In addition to the two ends of the Board Room being practically all glass above the pedestal course, a large skylight will be hung from the centre of the ceiling. This will tend to diffuse the light more effectually, besides adding greatly to the architectural effect of the room.

The electric lighting of the Board Room will probably be confined to the ceiling. Clusters of incandescent lights will be arranged in the centres of the coffers, besides which arc lights will be suspended under the skylight or moved back against the sides thereof when not in use.

Ventilation.

The ventilating machinery will be in the cellar, with the exception of two Blackman fans in the attic stories. The fresh and exhaust air will be transmitted through rectangular galvanized iron ducts. The aggregate length of these ducts will be several miles, their total weight will be about 200 tons, and they will circulate 26,000,000 cubic feet of air per hour. The disposition of the system will be very thorough. For the three basement stories the fresh air drawn from a vertical intake shaft extending to the roof on the south side of the building, will be circulated by a nine-foot blower, and vented back to the cellar by a ten-foot exhaust, and then driven to a vent shaft on the opposite side of the building. For the Board Room the following system has been designed: an eleven-foot blower to supply fresh air through the ceiling panels at the rate of four feet per second, the ducts to be carried up in the corners of the room; the vitiated air will be collected underneath the Board Room floor and vented by the Blackman's to an air house on the roof. It is intended that the fresh air descending from the ceiling will, by the time it reaches the floor, be of an equal tem-



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perature with the surrounding atmosphere, and, without causing a noticeable draft, will tend to lay the dust on the floor. For the upper stories, a ten-foot blower will be provided. Besides the foregoing, the system will include two seven-foot blowers for the cellar, a small fan for the kitchen and also a small blower for the storage battery room. All told, 160 HP. will be generated by the ventilating plant.

Architectural Treatment of Board Room.

A good example of the vicissitudes through which the design of the New York Stock Exchange was deftly steered is afforded by the changed location of the Board Room floor. As before mentioned, one idea of the Board of Governors was to devote the street floor of the new building to banking purposes. The program of competition, therefore, called for an alternative design showing the location of the Board Room on the second story, twenty feet above the level of Wall and New streets and over thirty feet above that of Broad street, and the original drawings were so designed. When the brokers came to give this matter serious thought the question was raised: suppose in times of panic or failure, when a member wishes to get from the floor of the Exchange to his office in the quickest possible time and several hundred men should happen to be thus interested simultaneously, how would they all get down the elevators (stairways being impracticable on account of height and insufficient space) without a crush and much loss of time? No one was prepared to dispute the force of this reasoning. Accessibility to the street and generous egress thereto from the Board Room was emphatically demanded. Brokers are accustomed to forceful and decisive measures. In a trice the interior design of the building was settled upon, the alternative scheme being thrown to the winds, and the draughtsmen in Mr. Post's office were stretching their paper for one of the hardest propositions that an architect has to encounter. This consisted in the adaptation of two facades to an interior radically different from that for which the elevation had been originally designed. These two facades, with their great windows and magnificent columns, were deemed too satisfactory to change. They fulfilled to a remarkable degree the practical requirements of lighting, and aesthetically they were no less successful, the unity of their design expressing the single great room within in a way that could not be misunderstoood by any intelligent observer. As will be seen by the sections, the Board Room floor was dropped to nearly the level of the New and Wall streets (thus adding about twenty feet to the height of the room) and a large entrance, solely for the members, designed in the centre of the Broad street front and leading by a generous double stair-

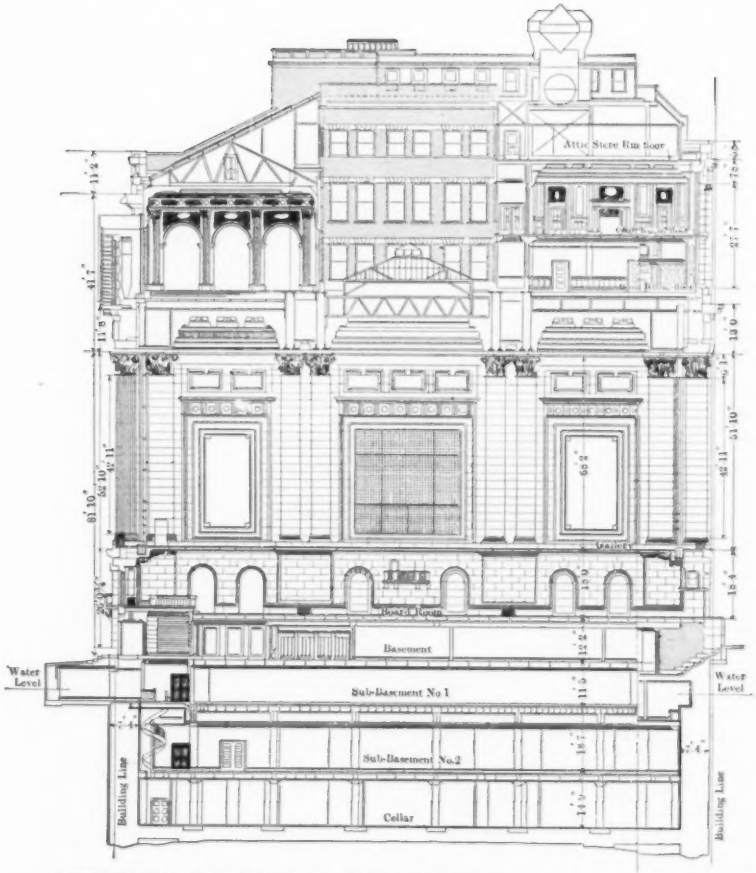
way directly to the floor of the Exchange. The extra twenty feet of vertical wall space was then treated as one great pedestal course, being the lower division of a classic order which, probably, has not an equal in scale in this country; the middle division, extending from the top of the pedestal to the cornice, is marked by four pairs of iron columns (boxed in by marble pilasters with gilded capitals) which support four flat transverse tresses having a clear span of 112 feet. These columns and girders, together with the marble columns and walls of the New and Broad street facades, support the upper stories of the Board Room. The permanent location of these eight interior iron columns was determined only after twenty or thirty drawings had been made. Their positions were affected by many other features of the building. At the risk of too severely trying the patience of the general reader who may have accompanied us thus far, we will briefly enumerate the chief difficulties attending this part of the problem, not so much because they are of particular interest in themselves as that they will serve to show the real nature, the hard realities of architectural design. A monumental building has a kind of personality which may be ever so simple, direct, truthful and harmonious, but which is the outcome of many perplexities and struggles. One of the requirements for the new Stock Exchange was a large interior light shaft in the upper stories. The location of this shaft, as well as that of the Board Room's skylight, obviously bear important relations to the centres of the supporting iron columns below. Again, the position of the light well was affected by the planning of the various rooms in the Club, Bond and Attic stories. During the development of the problem, as the disposition and proportion of these rooms were changed for various reasons, the centres of the columns below were shifted sympathetically; and vice versa, for there were considerations in the Board Room itself clamoring for recognition. The treatment of the marble wall spaces between the columns was in part simply aesthetic, and partly constructional. In the twenty-foot white marble pedestal course running around the room were designed the various entrances for the side alcoves, elevator shafts, etc. The arches of these openings were made circular to conform with the pedestal windows in the two facades, thereby establishing a continuous round-arched motif of openings and panels on all four sides. The locations of the side alcoves having been irrevocably fixed by the jags in the contour of the lot, their openings were necessarily confined to limited portions of the wall space. To escape these openings, the positions of the light iron columns in each side wall already dependent, as we have seen, upon conditions above, were jigged about most energetically. In the meantime, other obstacles had arisen. One of these was an iron

column in the wall of the adjoining Commercial Cable Building, as before noted. The Stock Exchange rents a large room used for smoking, reception, etc., on the New street end of this building, and it is proposed to connect this "Annex" or "Green Room" directly with the new Board Room. When studies were made, the coincidence in location of the Cable Building column and one of the arched openings designed for entering the Board Room was discovered. Then again, a passage from street to street designed in the basement story would have been practically closed had not the centres of the troublesome Board Room columns been placed so as to obviate this particular difficulty. During all the time that these practical matters were being adjusted, it was necessary to continually bear in mind the aesthetic questions involved in the decorative schemes for the extensive wall spaces above the pedestal course and between the pairs of columns, and also the architectural treatment of the utilitarian features in the pedestal itself, their proportions and arrangements with regard to each other, and their relations to the bold massive scheme of the Broad and New street ends. Finally, in this connection was included the study of two important features, both of which materially affected the positions of the Board Room supporting columns. These problems were: the designing of the Bulletin Boards (described below—a feature as important to the stock brokers system of transacting business as the telephone), and the architectural treatment of the corners of the room. Many months of patient study and thorough investigation were spent in these adjustments, the number and difficulty of which we have barely suggested. The opportunity to design an architectural *chef d'œuvre* (so imperfectly embraced in the old building) was so great, and the nature, purposes and significance of the building were of such peculiar, widespread and striking interest that the hard labor devoted to the problem was its own reward. It was a privilege to work upon it for the very reason that it was so difficult. The process of evolution was so long and varied, its requirements so exacting and the adjustments so nice, that the men who were thoroughly intimate with the problem through the entire period of its development were afforded a liberal architectural education and experience. Yet the sacrifice was very great.

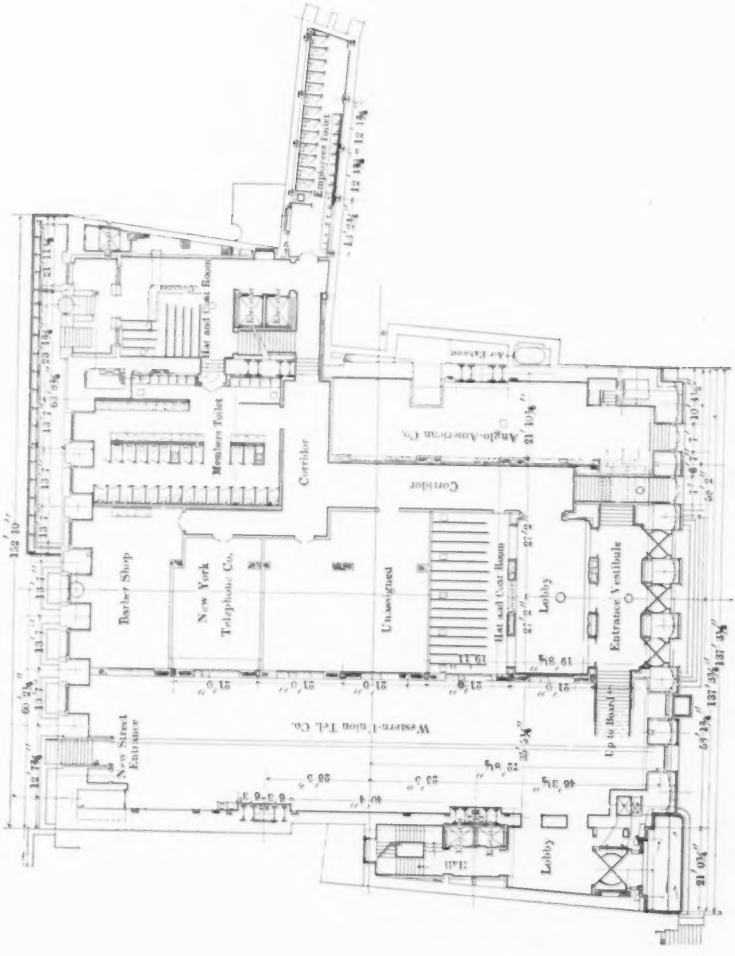
The Bulletin Boards.

The casual stranger in the visitor's gallery of the Stock Exchange is mystified. To the uninitiated the scene is confusion worse confounded: a crowd of several hundred restless men moving about with short, quick steps on apparently aimless errands, or congregating in excited groups where they jostle and seemingly threaten one another and yell. Many appear to be afflicted with

some kind of intermittent insanity, the manifestations being violent and coming with great suddenness; men will join a group about some pole and begin yelling unintelligibly, accompanying each yell by a gesture suggestive of nothing so much as a baseball pitcher in the act of "lining in a hot one" straight from the shoulder. Often no notice whatever will apparently be taken of these ebullitions; then again a dozen arms will shoot out like lightning, and amid a bedlam of howls, two men will exchange nods, scribble something on their pads and stride off. The lunacy spasms subside as suddenly as they appear. A man may be yelling and gesticulating like mad one minute and then calmly and unconcernedly turn away the next, greeting some friend whom he hasn't seen, perhaps, since the day before, as he would a long-lost brother. Occasionally a man who has been staring around the walls will rise up on his tiptoes and talk violent finger language with somebody across the room; then again men will meet and begin to chat and joke and thump each other in apparent oblivion to the rumpus about, when suddenly one of them will dive off unceremoniously and disappear from view. The longer the stranger looks upon this scene, the more bewildered he becomes; he can see no elements of order in the actions of that surging mass, and can understand neither the beginning nor the end of the important transactions that he knows are occurring every minute. And yet there is no more precise nor better regulated system of doing business in the world than that in vogue on the floor of the New York Stock Exchange. In the present temporary quarters of the Exchange, situated in the southern end of the Produce Exchange Board Room, there may be seen on the east wall a large rectangular checkerboard apparatus with various colored stripes. This is the bulletin board, and its purpose is to inform the brokers when they are wanted at their telephones. The board is divided into 1,200 squares, each square having a cover or flap underneath which is a number, which represents a certain member of the Exchange. When the office member of a brokerage firm desires to speak with his partner upon the Exchange floor he rings up their private telephone, which is instantly answered by the clerk stationed there; the latter then presses a button which sets the annunciator key board in action, thereby disclosing the desired number upon the bulletin board. Meanwhile, the telephone clerk writes the order or message, if it be such, upon a slip, and by the time the broker on the floor (who is constantly watching the bulletin board) has reached his telephone booth, the order is ready, and he starts off to execute it. If a customer or other visitor calls at the Exchange to see a member thereof, the doorkeeper communicates with the man operating the annunciator, the desired number is dropped and the member own-



LONGITUDINAL SECTION SHOWING BULLETIN BOARD IN CENTER PANEL OF BOARD ROOM WALL.



BASEMENT FLOOR.

ing the same thereupon goes to his booth and ascertains who his visitor is. Or should one member on the floor desire to speak to another whom he cannot see in the crowd, he orders an attendant to drop the other's number, and then meets the man whom he wishes to see at the latter's booth. In the Board Room of the old building the bulletin board was very long and narrow, extending clear across the New street end and just under the windows. This made constant watching it injurious to the eyes, but it was the only place where it could be seen from every part of the floor. In the new Board Room there shall be two bulletin boards, exact duplicates of each other, in the centre panels of the side walls above the pedestal course. Two conditions were imposed by the Building Committee in respect to the new board: first, that the numbers should be distinctly legible from every part of the floor; and second, that they should be arranged compactly so that a member who is watching several numbers besides his own (as frequently happens at lunch time, etc.) can cover the entire area of the board at a quick glance. The problem of designing a checkerboard containing 1,200 numbers, making an area of at least 800 square feet, so that it should fit in the space provided, should be a pleasing object to the eye and should harmonize with the architectural scheme of a room whose dominant note was given by a few features of simple but tremendous scale, was one which may be calculated to tax the resources of the most conscientious designer. In the new bulletin board, instead of the numbers being disclosed by the flap device, they will be made of opaque glass, which may be illuminated by electric lights behind. Back of each number (which will measure about 9x12 inches) will be placed a cluster of light bulbs, each of a different color, for the purpose of conveying more explicit information. Thus a red illumination might mean that a broker was wanted at the New street entrance, a green at the Broad street, etc.

Visitors' Gallery.

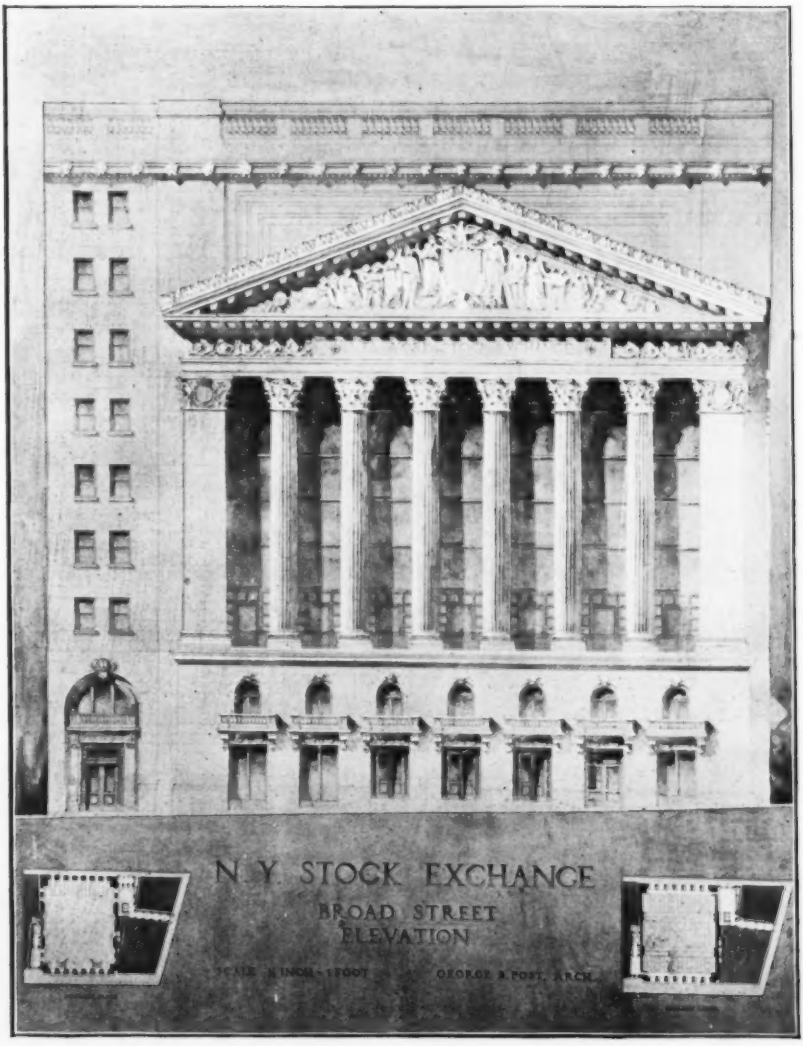
Ceiling, Etc.

The space devoted to galleries in the old Stock Exchange will be greatly curtailed in the new building. The members, as a rule, are adverse to allowing the public free and unrestricted entrance to the Board Room galleries. Although bombs and such things are not thrown about quite as recklessly in our country as abroad, it would seem the part of wisdom in these strenuous times to provide as well as may be against such a happening as the French Chamber of Deputies incident a few years ago. In the future, visitors will be admitted by cards only to the gallery at the Broad street end of the Board Room. At the New street end will be a similar gallery,

which may be used by the members in connection with the smoking room adjoining the north side. By means of glass doors in the great screen access from these galleries may be had to the small balconies shown on the elevation drawings. The new Board Room ceiling presented an interesting opportunity for interior architectural design on a single large surface. The limiting conditions were: first, the centre skylight; and second, the two central transverse trusses which form part of the supporting construction of the upper stories. At the outset, therefore, the ceiling was given three divisions, of which the skylight took up part of the central one. This arrangement, of itself, had the effect of disturbing the rectangular proportions of the room, making them more nearly square. Hence longitudinal lines were introduced dividing the width of the ceiling into seven coffers. These are designed to accentuate the exterior stone columns, which, as before noted, are intended to count in the interior effects of the room. By this scheme the skylight, instead of becoming a strongly accentuated feature in the ceiling, as at first intended, is now treated merely as a panel, differing from the others only in that it is considerably larger and constructed of glass. The material for the ceiling proper will be of plaster—white and gold. There is apparent in all the various sketches made for this ceiling, and, in fact, for the whole building, a conscientious endeavor to give due recognition aesthetically to every important constructional requirement; and, moreover, to confine all decorative treatment to such essential features. There is nothing meaningless and nothing unduly exaggerated. With all its diverse and complex elements, the design as a whole is simple, straightforward and consistent.

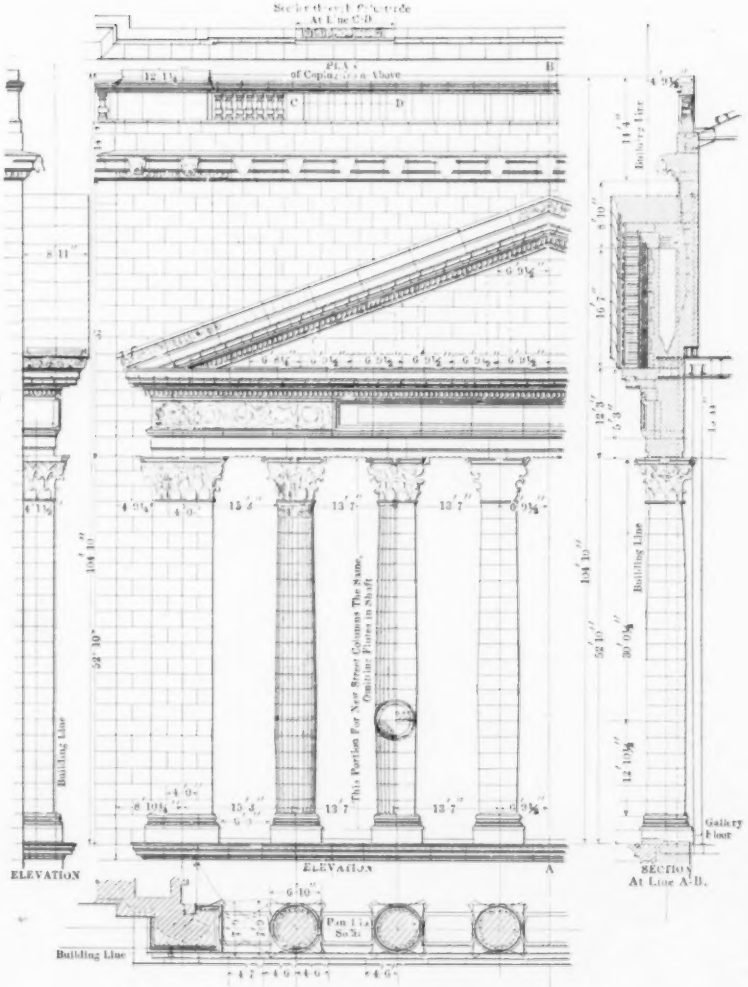
Lower Floor Plans.

As before noted, the decision to excavate the lot for the Stock Exchange to bed rock caused the means for accommodating in the basement stories various features that in the old building were crowded in the upper floors or dispensed with altogether. Hat and coat rooms, barber shop, baths, corridor from street to street, private rooms adjacent to the vault for individual use, members' toilet room, employees' toilet room and employees' locker room will all be generously provided for underground in the new building. The removal of the employees' locker room from an upper to a basement story is a much-needed reform. Formerly, at the close of each day's business, hallways and elevators immediately became congested by a crowd of two or three hundred employees, all in a hurry to get to their lockers. Besides this, they were obliged to use the same entrance in getting to and from their elevators as the members. As arranged in the new building, the em-

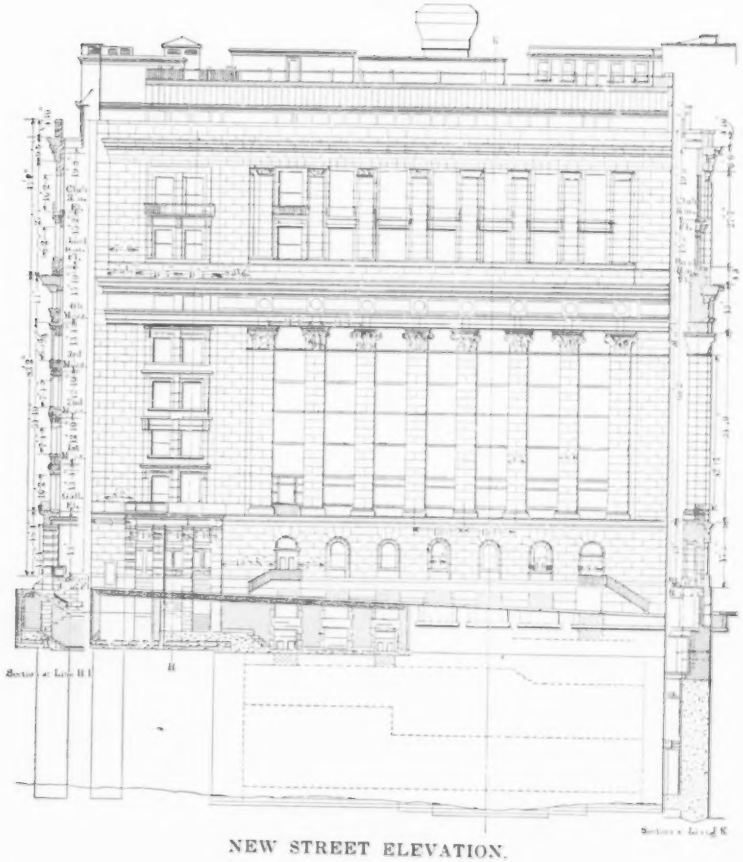


BROAD STREET ELEVATION.

George B. Post, Architect.



DETAIL OF MARBLE WORK ON BROAD STREET ELEVATION.



NEW STREET ELEVATION.

ployees will have a special entrance in the basement, and a special stairway leading therefrom to their locker room, besides another special stairway to the Board Room. Hence their means of access to the latter will be entirely distinct and separate from the main entrances.

Broad Street Facade.

Exception has often been taken, and with reason, to the violent incontinuity of the New York's skyline—particularly in the business districts. Twenty and thirty story buildings alternate with structures one-half and one-quarter as high. In many instances the lower buildings suffer, especially in comparison, by reason of having been designed approximately in the same scale as their towering neighbors. In close proximity to the site of the Stock Exchange are several very high buildings. The Commercial Cable, of twenty stories, is on one side, and The Wilks Building, of ten stories, is on the other, while directly across the street is the Manhattan Life, of twenty-one stories. Had the new Stock Exchange, with its equivalent of eight stories, been designed on the same scale as its neighbors—i. e., with the same relation between horizontal and vertical divisions—it would undoubtedly have suffered greatly in comparison, just as the old Exchange did. But with those magnificent Corinthian columns, fifty-two feet in height, and back of them the single undivided window, expressing with the most perfect frankness the great room within, and crowning all the sloping lines of the immense pediment setting at defiance the right angles of the other buildings around, the new Exchange will have a scale of its own, at once so simple and impressive as to readily signalize it among its surroundings. There is another object lesson in architecture that may be learned from this Broad street facade. The illustration shows on the southern end of the building a recessed portion, several stories in height, which latter are indicated by pairs of plain square windows. The design of this part is in such marked contrast to the rest of the facade that it might be considered incongruous. That the designer was actuated by motives strictly truthful, however, will be realized when the plan of the building is studied. The jag in the contour of the lot provided a space outside of the Board Room just large enough for the elevators and stairs from Broad street and also for six mezzanine floors in the height of the Board Room. To design the exterior of this part of the building similarly with the rest of the front, as some of the competing architects did by simply adding another bay to the latter, would be equivalent to asserting that such part belonged to the Board Room, or, at least, was of equal importance. A further study of this elevation will reveal difficulties encountered

by the designer in adapting a facade to an interior radically different from the one for which that facade was originally intended. Judging from the exterior it might still be questioned if the logical position of the Board Room floor would not be behind the strongly marked string-course at the base of the colonnade. We have seen how this was impossible, owing to the discarding of the twenty-foot banking story, and the substitution of the interior pedestal course in its place, necessitating thereby the same relative position of the colonnade base outside. The matter was compromised by designing the row of balconies under the arched windows. These balconies now mark the position of the Board Room floor—not quite as strongly perhaps as the heavy, continuous string-course above might have done, but naturally and artistically. Another aesthetic question was involved in the design of the main entrance to the Board Room. As first planned these were to be in the recess and the elevation was designed accordingly. When finally and after a long struggle on the designers' part they were placed in the centre of the Broad street front, it was at once realized that the continuous monotony of the colonnade above forbade any pronounced accentuation of the details in the base. But truthfulness demanded that the importance of the main entrance be given some recognition. The three central openings were, therefore, slightly more enriched than the others and were still further emphasized by the stone steps leading to them.

Such, briefly told, is the story of the design for New York's most important commercial building. "Briefly told," for although much space has been taken in the telling, these pages are not a tithe of what might in all justice be written on the subject. Merely the main facts on both sides of the case have herein been set forth: on the one hand the evidence as contained in the client's needs, and on the other hand the architect's ways and means of providing therefor. The verdict must be left to the future. A year hence the building will have been completed. Should it fail in any particular to satisfy the expectations had of it, the cause of such failure will not have been foretold. But the proof of the pudding is in the eating.

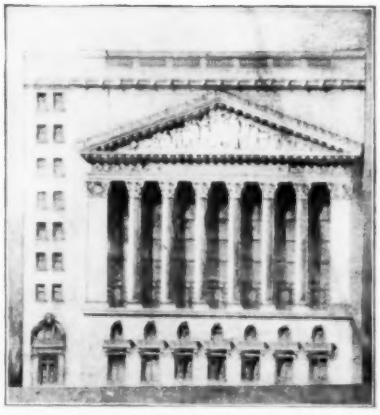
Percy C. Stuart.

TECHNICAL DEPARTMENT.

THE BUILDER'S RESPONSIBILITY

for the Construction of

The New York Stock Exchange.



THE NEW YORK STOCK EXCHANGE.

Building in New York has from the beginning been regulated by economic considerations. Ever since the city shed its colonial skin, and acquired metropolitan characteristics the work of the builder has been increasing in importance. In no other city in the world has so much capital been used in producing residences and structures dedicated to commercial and pleasure pursuits. The yearly cost of building in the city of New York amounts to more than the yearly cost of the food for its inhabitants. So the builder is prominent in the metropolitan field. The cause for this is not far to seek. The enormous increase in land values and the improvements made in building construction have turned the buildings erected thirty years ago into simple encumbrances. It is not an unusual thing in New York to see a handsome commercial building torn down to make room for a modern sky-scraper which will prove more profitable. While cities like Chicago are growing out New York is growing up. And as the height and value of the building operations increase the responsibility of the builder increases.

The class of buildings being erected to-day is so different from the character of the buildings of ten years ago that each one presents a special problem. The builder of to-day ranks with the engineer and architect. He must bring to bear on the difficulties which confront him a trained mind with superior powers of organization and fertility of resource.

As our building operations become more complex and expensive, new agencies must be employed to render them more effective. Only a few years ago the construction of a million-dollar building was regarded as a great undertaking, but there are numerous buildings in New York at present the cost of which exceeds $1,000,000 and a few whose completion involved the expenditure of several millions. With the increased cost of structures has come the necessity for more perfect mechanical appliances for handling materials, a more highly developed system of operating, and more effective capacity for handling men in large numbers. The problem of storing materials on a limited area is a serious one, for frequently the contractor has no space for this purpose, except that on which he is going to build, and the materials must be brought to the ground in such quantities as not to impede the progress of the work and yet there must be always enough materials to supply the demands of hundreds of busy workmen—a delicate problem for even a master mind. The modern builder is a general who consolidates and directs. His enemy is Time. The workmen are his army and their weapons are their tools, with their labor to shorten the campaign. The builder is neither architect nor engineer nor artisan. He is all three. He is an operator in the field of construction with a training that permits as occasion demands cognizance of the minutest details or a broad and general view of the whole operation.

It is often said that it is as easy to manage $1,000,000 as $1,000, and the frequent repetition has made many people believe it, but it is well to scrutinize these current sayings before accepting them at their face value. As far as the builders are concerned, not one would say it is as easy to erect a million-dollar building as one that costs only one thousand, aside from any question of responsibility. One of the most natural evolutions of the builders' trade is that the greater building operations are falling more and more into the hands of a few individuals or firms that have ability, reputation and resources.

The highest compliment that can be paid to a builder is that he should be sought regardless of cost, that work should be awarded him without competitive bidding; that the job should seek the man, and not the man the job. Such a compliment is worth more than a hundred laudatory expressions. It tells a complete story of faithful work, of honest endeavor and successful achievement. It is a volume in a nut shell. Such a compliment was recently paid to one of New York's builders.

After the plans for the New York Stock Exchange were finally accepted the question came up as to who should have charge of the construction. Some of the committee suggested that the work

be let to the lowest bidder, but this suggestion was not received favorably by the majority. They preferred to place the important work in the care of a builder whose achievements are accepted as the highest type of building construction.

The building committee of the Exchange were unanimous in choosing for this important work Charles T. Wills, and the architect, George B. Post, heartily endorsed their selection. The new Stock Exchange Building will, when completed, represent an expenditure of $3,000,000, and its construction will embody the highest achievements of modern engineering skill.

OTIS ELEVATOR COMPANY.

71 BROADWAY, NEW YORK.

THE OTIS ELEVATOR

PARTIAL LIST OF IMPORTANT BUILDINGS EQUIPPED WITH OTIS ELEVATORS.

Biltmore—Residence, Geo. W. Vanderbilt, Esq.	Richard M. Hunt, Architect.
The Breakers—Residence, Cornelius Vanderbilt, Esq.	Richard M. Hunt, Architect.
Residence, Elbridge T. Gerry, Esq.	Richard M. Hunt, Architect.
St. Paul Building.	George B. Post, Architect.
Havemeyer Building.	George B. Post, Architect.
Union Trust Building.	George B. Post, Architect.
New York Life Insurance Building.	McKim, Mead & White, Architects.
Madison Square Garden.	McKim, Mead & White, Architects
Metropolitan Club.	McKim, Mead & White, Architects.
Townsend Building.	Cyrus L. W. Eidlitz, Architect
Washington Life Insurance Building.	Cyrus L. W. Eidlitz, Architect
New York Bar Association.	Cyrus L. W. Eidlitz, Architect.
Mohawk Building.	R. H. Robertson, Architect.
McIntyre Building.	R. H. Robertson, Architect.
Van Ingen Building.	R. H. Robertson, Architect.
Schermerhorn Building (23d Street).	Henry J. Hardenbergh, Architect
Astor Building.	Henry J. Hardenbergh, Architect.
Martinique Hotel	Henry J. Hardenbergh, Architect.
Metropolitan Opera House	Cady, Berg & See, Architects.
National Shoe and Leather Bank	Cady, Berg & See, Architects.
Hartford Fire Insurance Building.	Cady, Berg & See, Architects.
Varick Street Warehouses.	Chas. C. Haight, Architect.
Lawyers' Title Insurance Building.	Chas. C. Haight, Architect.
N. Y. Orthopaedic Hospital.	Chas. C. Haight, Architect.
Mutual Life Insurance Building.	Clinton & Russell, Architects.
Woodbridge Building.	Clinton & Russell, Architects.
Sampson Building.	Clinton & Russell, Architects.
Mail and Express Building.	Carrere & Hastings, Architects.
Pierce Building.	Carrere & Hastings, Architects.
Residence of H. T. Sloane, Esq.	Carrere & Hastings, Architects.
Empire Building.	Kimball & Thompson, Architects.
Manhattan Life Insurance Building.	Kimball & Thompson, Architects.
Standard Oil Building.	Kimball & Thompson, Architects.
New Altman Stores.	Kimball & Thompson, Architects.
Mutual Reserve Fund Building.	W. H. Hume & Son, Architects.
Spingler Building.	W. H. Hume & Son, Architects.
Netherlands Hotel.	W. H. Hume & Son, Architects.
Scott & Bowne Building.	Schickel & Ditmars, Architects.
R. H. Macy & Co.	Schickel & Ditmars, Architects.
Lakewood Hotel.	Schickel & Ditmars, Architect
Presbyterian Building.	James B. Baker, Architect.
Johnston Building.	James B. Baker, Architect.
National Bank of Commerce.	James B. Baker, Architect.
United States Trust Co.	R. W. Gibson, Architect.
New York Clearing House.	R. W. Gibson, Architect.
Onondaga County Savings Bank, Syracuse, N. Y.	R. W. Gibson, Architect.
St. Luke's Hospital.	Ernest Flagg, Architect.
Singer Building.	Ernest Flagg, Architect.
D. O. Mills Model Hotel.	Ernest Flagg, Architect.
Post Graduate Medical School and Hospital.	W. B. Tuthill, Architect.
Carnegie Music Hall.	W. B. Tuthill, Architect.
Kuhn, Loeb & Co.	De Lemos & Cordes, Architects.
Fulton Building.	De Lemos & Cordes, Architects.
Eagle Building.	De Lemos & Cordes, Architects.
Metropolitan Life Insurance Building.	N. Le Brun & Son, Architects.
Fire Department Headquarters.	N. Le Brun & Son, Architects.
New York Commercial Buildings.	Robert Maynicke, Architect
John Wanamaker's.	Robert Maynicke, Architect